Vol. 1025 Number 3

OFFICIAL GAZETTE

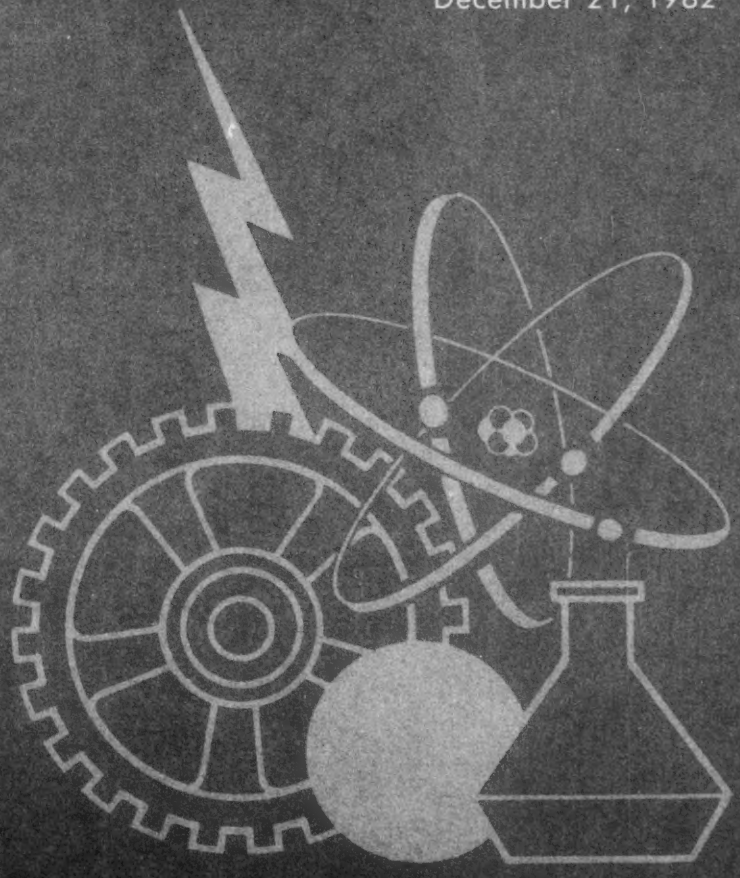
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

December 21, 1982



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

December 21, 1982 Volume 1025 Number 3

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1025 OG 18
Reissue Applications Filed	1025 OG 18
Request for Reexamination Filed	1025 OG 19
Notice of Application for Recordation of Trade Name	1025 OG 19
Errata	1025 OG 20
Patent Certificates of Correction	1025 OG 21
Disclaimers	1025 OG 21
Dedication	1025 OG 21
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1025 OG 22
Condition of Patent Applications	1025 OG 23
Reissue Patents Granted (31,105)	759
Plant Patents Granted (4,966)	761
Patents Granted	
General and Mechanical (4,364,123)	763
Chemical (4,364,738)	977
Electrical (4,365,106)	1077
Design Patents Granted (267,284)	1163
Index of Patentees	PI 1
Indices of Reissue, Designs and Plant Patentees	PI 45
Classification of	
Patents (Including Reissues)	PI 49
Designs and Plants	PI 52
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 53
Designs and Plants	PI 54
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	710.00
International Fees	
Basic Fees (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation fee (for each national or regional office)	65.00

DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner of Patents & Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,884,882, Re. S.N. 394,462, Filed July 1, 1982, Cl. 525/10, CERTAIN EPDM COPOLYMER/MALEIC ANHYDRIDE ADDUCTS AND THERMOPLASTIC ELASTOMERS THEREFROM, Stanley William Caywood, Jr., Owner of Record: *E. I. du Pont deNemours and Co., Wilmington, Del.,* Attorney or Agent: Paul R. Steyermark, Ex. Gp.: 144

3,922,377, Re. S.N. 421,785, Filed Sept. 23, 1982, Cl. 426/645, HEAT-PROCESSED DEHYDRATED BACTERIOLOGICALLY-ST ABLE PORK RIND PRODUCT AND PROCESS FOR PREPARING SAME, Kenneth F. Whittle, Owner of Record: *Protein Foods (U.K.) Ltd., Tipton, England,* Attorney or Agent: Leo A. Rosetta, Ex. Gp.: 172

3,946,746, Re. S.N. 432,165, Filed Sept. 30, 1982, Cl. 130/27-P, HARVESTING MACHINES, Frans J. G. C. Decoene, et al., Owner of Record: *Sperry Corp., New Holland, Pa.,* Attorney or Agent: Frank A. Seemar, et al., Ex. Gp.: 333

3,979,548, Re. S.N. 427,148, Filed Sept. 29, 1982, Cl. 428/425, POLYURETHANE COATED SAFETY GLASS, Wolfgang Schafer, et al., Owner of Record: *Saint-Gobain Industries, Neuilly-sur-Seine, France,* Attorney or Agent: John T. Synnestvedt, et al., Ex. Gp.: 164

3,997,134, Re. S.N. 325,706, Filed Nov. 30, 1981, Cl. 244/110B, FUSELAGE TAIL JET ENGINE THRUST REVERSER, George T. Drakeley, Owner of Record: *The Boeing Co., Seattle, Wash.,* Attorney or Agent: Robert W. Beach, et al., Ex. Gp.: 315

4,109,903, Re. S.N. 281,145, Filed July 7, 1981, Cl. 271/3, FLUIDIC FEEDING OF DOCUMENTS TO AN EXPOSURE STATION, Klaus K. Stange, et al., Owner of Record: *Xerox Corp., Stamford, Conn.,* Attorney or Agent: Paul F. Morgan, Ex. Gp.: 313

4,118,242, Re. S.N. 431,097, Filed Sept. 30, 1982, Cl. 106/98, PROCESS FOR MANUFACTURING CONCRETE OF HIGH CORROSION RESISTANCE, Olav Kjohl, et al., Owner of Record: *Aksjeselskapet Norcem, Oslo, Norway,* Attorney or Agent: John E. Lind, et al., Ex. Gp.: 113

4,124,488, Re. S.N. 430,686, Filed Sept. 30, 1982, Cl. 210/134, WATER PURIFICATION BY REVERSE OSMOSIS, Leslie P. S. Wilson, Owner of Record: *Ocean Water Ltd., Turks and Caicos Island, British West Indies,* Attorney or Agent: Edward F. Connors, Ex. Gp.: 176

4,168,551, Re. S.N. 427,493, Filed Sept. 29, 1982, Cl. 4/231, TOILET FLUSH WATER COLORIZER, Horst Hautmann, et al., Owner of Record: *Globol-Werk Gmbh, Neuburg, Germany,* Attorney or Agent: Gilbert L. Wells, Ex. Gp.: 243

4,199,107, Re. S.N. 424,646, Filed Sept. 27, 1982, Cl. 239/600, LIQUID SPRAY JET ASSEMBLY AND A MINERAL MINING MACHINE CUTTING HEAD INCORPORATING SUCH ASSEMBLY, Garrick R. Bingham, Owner of Record: *Green and Bingham Ltd., Doncaster, Yorkshire, England,* Attorney or Agent: Norbert P. Holler, et al., Ex. Gp.: 313

4,221,148, Re. S.N. 427,159, Filed Sept. 29, 1982, Cl. 83/869, SLICE-CUTTING-WIRE OPERATIVE PORTIONS, David L. Lewis, Owner of Record: *Inventor,* Attorney or Agent: Peter L. Costas, Ex. Gp.: 324

4,225,357, Re. S.N. 429,138, Filed Sept. 29, 1982, Cl. 106/86, METHOD OF PRODUCING AND DISTRIBUTING CONCRETE PRODUCT, Harry Hodson, Owner of Record: *Inventor,* Attorney or Agent: Arthur W. Fisher, Ex. Gp.: 113

4,233,031, Re. S.N. 426,690, Filed Sept. 29, 1982, Cl. 023/230.002, ELECTROCHEMICAL TESTING SYSTEM AND METHOD, Wayne R. Matson, et al., Owner of Record: *Environmental Sciences Associates, Inc., Bedford, Mass.,* Attorney or Agent: Oliver W. Hayes, et al., Ex. Gp.: 173

4,236,521, Re. S.N. 430,555, Filed Sept. 30, 1982, Cl. 128/348, PROBE, Friedrick G. Lauterjung, Owner of Record: *Inventor,* Attorney or Agent: Martin A. Farber, Ex. Gp.: 335

4,238,162, Re. S.N. 426,563, Filed Sept. 29, 1982, Cl. 401/198, NIB RETAINING ASSEMBLY FOR A WRITING INSTRUMENT, Edward E. Sherwood, Owner of Record: *Sanford Research Co., Bellwood, Ill.,* Attorney or Agent: Ernest A. Wegner, et al., Ex. Gp.: 336

4,239,533, Re. S.N. 419,507, Filed Sept. 17, 1982, Cl. 75/134.006, MAGNETIC ALLOY HAVING A LOW

MELTING POINT, Takeshi Miyazaki, Owner of Record: *Hitachi Metals, Ltd., Tokyo, Japan,* Attorney or Agent: Donald R. Antonelli, et al., Ex. Gp.: 111

4,244,707, Re. S.N. 426,584, Filed Sept. 29, 1982, Cl. 51/308, ABRASIVE COMPOSITION FOR USE IN TOOTHPASTE, Satish K. Wason, Owner of Record: *J. M. Huber Corp., Locust, N.J.,* Attorney or Agent: Harold H. Flanders, Ex. Gp.: 147

4,256,004, Re. S.N. 431,738, Filed Sept. 30, 1982, Cl. 84/1.21, ELECTRONIC MUSICAL INSTRUMENT OF THE HARMONIC SYNTHESIS TYPE, Chifumi Takeuchi, Owner of Record: *Nippon Gakki Seizo Kabushiki, Kaisha, Hamamatsu, Japan,* Attorney or Agent: W. Robert Spensely, et al., Ex. Gp.: 217

4,262,034, Re. S.N. 426,959, Filed Sept. 29, 1982, Cl. 427/34, METHODS AND APPARATUS FOR APPLYING WEAR RESISTANT COATINGS TO ROTO-GRAVURE CYLINDERS, Dennis Andersen, Owner of Record: *Armotek Industries, Palmyra, N.J.,* Attorney or Agent: Ronald L. Grudziecki, Ex. Gp.: 162

4,278,788, Re. S.N. 319,374, Filed Nov. 9, 1981, Cl. 528/494, REMOVAL OF RESIDUAL CATALYST FROM POLYOLEFIN POLYMERS, James R. Hatfield, et al., Owner of Record: *Northern Natural Gas Co., Omaha, Nebr.,* Attorney or Agent: Donald F. Haas, et al., Ex. Gp.: 144

4,280,904, Re. S.N. 424,676, Filed Sept. 27, 1982, Cl. 176/210, HIGH CAPACITY FOLDED MOVING BED ION EXCHANGE APPARATUS AND METHOD FOR TREATING PHOSPHORIC ACID, Lee G. Carlson, Owner of Record: *American Petro Mart, Inc., Barton, Fla.,* Attorney or Agent: Timothy L. Tilton, et al., Ex. Gp.: 176

4,283,989, Re. S.N. 424,321, Filed Sept. 27, 1982, Cl. 89/65, DOPPLER-TYPE PROJECTILE VELOCITY MEASUREMENT AND COMMUNICATION APPARATUS AND METHOD, Peter P. Toulios, Owner of Record: *Ares, Inc., Port Clinton, Ohio,* Attorney or Agent: Allan R. Fowler, et al., Ex. Gp.: 221

4,296,591, Re. S.N. 432,164, Filed Sept. 30, 1982, Cl. 56/10.3, DAMPED APPARATUS FOR QUICK-STOPPING ROTATING MEMBERS, Wayne B. Martenas, et al., Owner of Record: *Sperry Corp., New Holland, Pa.,* Attorney or Agent: Frank A. Seemar, et al., Ex. Gp.: 333

4,302,369, Re. S.N. 394,000, Filed June 30, 1982, Cl. 260/17.4GC, ALUMINUM MODIFIED WATER ABSORBENT COMPOSITION, Lyle F. Emmquist, Owner of Record: *Henkle Corp., Minneapolis, Minn.,* Attorney or Agent: Forrest L. Collins, et al., Ex. Gp.: 143

4,305,234, Re. S.N. 431,305, Filed Sept. 30, 1982, Cl. 51/330, COMPOSITE BRUSH, Franklin D. Pichelman, Owner of Record: *Flo-Pac Corp., Minneapolis, Minn.,* Attorney or Agent: James R. Haller, Ex. Gp.: 323

4,322,449, Re. S.N. 433,848, Filed Oct. 12, 1982, Cl. 427/3, PHARMACEUTICALS HAVING DOTTED ACTIVE INGREDIENTS AND A METHOD AND APPARATUS FOR THE PREPARATION THEREOF, Gunther Voss, et al., Owner of Record: *Boehringer Ingelheim GmbH, Ingelheim Am Rhein, Germany,* Attorney or Agent: Nelson Littell, et al., Ex. Gp.: 162

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,652,645, Reexam. No. 90/000,280, Requested: Oct. 28, 1982, Cl. 560/2, HAOLPHENOXY BENZOIC ACID HERBICIDES, Robert J. Theissen, Owner of Record: *Rhone-Poulenc Agrochemie, Lyon, France,* Attorney or Agent: None, Ex. Gp.: 120, Requester: Rohm & Haas Co., Philadelphia, Pa.

3,776,715, Reexam. No. 90/000,279, Requested: Oct. 28, 1982, Cl. 71/111, HALOPHENOXY BENZOIC ACID HERBICIDES, Robert J. Theissen, Owner of Record: *Rhone-Poulenc Agrochemie, Lyon, France,* Attorney or Agent: Osward G. Hayes, Ex. Gp.: 126, Requester: Rohm and Haas Co., Philadelphia, Pa.,

3,941,830, Reexam. No. 90/000,278, Requested: Oct. 28, 1982, Cl. 560/2, SUBSTITUTED PHENOXYBENZOIC ACIDS AND ESTERS THEREOF, Robert J. Theissen, Owner of Record: *Rhone-Poulenc Agrochemie, Lyon, France,* Attorney or Agent: Andrew L. Gaboriault, Ex. Gp.: 120, Requester: Rohm & Haas, Philadelphia, Pa.

4,112,921, Reexam. No. 90/000,292, Requested: Nov. 22, 1982, Cl. 126/448, METHOD AND SYSTEM FOR UTILIZING A FLEXIBLE TUBING SOLAR COLLECTOR, Calvin D. McCracken, Owner of Record: *Bio-Systems, Inc., Ellenville, N.Y.,* Attorney or Agent: Parmelee, et al., Ex. Gp.: 340, Requester: Environmental Resources, Inc., Las Vegas, Nev.

4,161,436, Reexam. No. 90/000,289, Requested: Nov. 17, 1982, Cl. 204/157.1R, METHOD OF ENERGIZING A MATERIAL, Gordon Gould, Owner of Record: *Patlex Corp., Ardmore, Pa.,* Attorney or Agent: Lerner, et al., Ex. Gp.: 112, Requester: General Motors Corp., Detroit, Mich.

Notice of Application for Recordation of Trade Name "COMBE INCORPORATED"

Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "COMBE INCORPORATED," used by Combe Incorporated, a corporation organized under the laws of the State of Delaware, located at 1101 Westchester Avenue, White Plains, N.Y. 10604.

The application states that the trade name is used in connection with the following merchandise manufactured in several foreign countries: hair coloring; toiletries; cosmetics; odor-destroying insoles; odor-destroying hosiery; denture adhesives; pharmaceutical creams, ointments and lotions; veterinary medications and shampoos; and hair care products. Various foreign subsidiaries are authorized to use the trade name. Appropriate accompanying papers were submitted with the application.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Any such submission should be addressed to the Commissioner of Customs, Entry, Licensing and Restricted Merchandise Branch, Wash., D.C. 20229, in time to be received no later than 60 days from the date of publication of this notice in the Federal Register.

For Further Information Contact:

Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Avenue, NW., Wash., D.C. 20229 (202-566-5765).

Notice of the action taken on the application for recordation of this trade name will be published in the Federal Register.

DONALD W. LEWIS,

Nov. 18, 1982. *Director, Entry Procedures and Penalties Division.*

Errata

The following registration numbers, listed in the "Trademark Registrations Issued" section of the Official Gazettes of Oct. 5, 1982 and Oct. 12, 1982, were inadvertently issued:

TMOG Oct. 5, 1982	TMOG Oct. 12, 1982
1,211,759	1,212,623
	1,212,624

Consequently, certificates of registration bearing the above-identified numbers were not issued on the dates indicated, and these registration numbers have been vacated.

HERBERT C. MANSLEY,
Director, Trademark Examining Operation.

Nov. 15, 1982.

PATENT NOTICES

Certificates of Correction for the Week of Dec. 21, 1982

4,032,900	4,314,777	4,333,421	4,346,607
4,091,248	4,315,004	4,334,212	4,347,105
4,173,409	4,317,957	4,334,501	4,347,575
4,202,983	4,318,537	4,334,567	4,347,836
4,216,283	4,318,986	4,334,763	4,348,938
4,234,421	4,319,334	4,334,951	4,349,560
4,235,239	4,319,868	4,334,999	4,351,119
4,23 5,907	4,321,392	4,335,504	4,351,430
4,258,358	4,321,749	4,335,796	4,351,864
4,263,081	4,321,790	4,336,416	4,351,907
4,279,459	4,323,237	4,338,667	4,351,982
4,279,644	4,323,837	4,338,972	4,352,970
4,284,016	4,325,311	4,339,806	4,353,758
4,284,499	4,325,517	4,340,137	4,353,840
4,284,790	4,325,700	4,340,481	4,354,091
4,292,755	4,326,590	4,340,778	4,354,226
4,297,125	4,327,280	4,341,765	4,354,248
4,297,360	4,327,702	4,342,841	4,354,784
4,301,899	4,329,645	4,343,036	4,354,812
4,305,554	4,331,367	4,343,739	4,354,913
4,307,092	4,331,952	4,343,913	4,354,999
4,307,859	4,332,277	4,344,115	4,355,382
4,310,572	4,332,554	4,344,878	4,355,930
4,311,614	4,332,673	4,344,992	4,356,277
4,311,738	4,332,719	4,345,851	
4,312,457	4,333,363	4,346,291	

Disclaimers

3,819,547.—*Walter O. Pillar,* Monroeville, and *Robert A. Sutton,* Coraopolis, Pa. SELF-EXTINGUISHING POLYMER COMPOSITIONS CONTAINING HEXABROMO-2-BUTENE. Patent dated June 25, 1974. Disclaimer filed Oct. 12, 1982, by the assignee, *Atlantic Richfield Co.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6 and 7 of said patent.

3,919,548.—*David E. Porter,* Burlingame, Calif. X-RAY ENERGY SPECTROMETER SYSTEM. Patent ...ed Nov. 11, 1975. Disclaimer filed Oct. 10, 1982, by the assignee, *Kevex Corp.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

4,024,979.—*Walter J. Craig,* Crest Hill; *Walter K. Lewis,* New Lenox; and *Rondell L. Bailey,* Chicago, Ill. HANDLING RING FOR PLASTIC DRUM. Patent dated May 24, 1977. Disclaimer filed Oct. 29, 1982, by the assignee, *Plasti-Drum, Inc.*

Hereby enters this disclaimer to claims 1 to 3 of said patent.

4,354,993.—*Franciscus X. N. M. Kools;* and *Sytse Strijbos,* Eindhoven, Netherlands. METHOD OF MANUFACTURING A MAGNET BODY. Patent dated Oct. 19, 1982. Disclaimer filed Oct. 12, 1982, by the assignee, *U. S. Philips Corp.*

The term of this patent subsequent to Jan. 29, 1999 has been disclaimed.

Dedication

3,882,598.—*Paul Lewis Earle,* Denver; *Timothy Howard Seeber,* Evergreen; and *Milton French Trosper, Jr.,* Thornton, Colo. DUST CONTROL CUTTING ASSEMBLY FOR CUTTING SHEET MATERIAL. Patent dated May 13, 1975. Dedication filed July 19, 1982, by the assignee, *Johns-Manville Corp.*

Hereby dedicates all claims for the entire remaining term of said patent to the Public.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF October 16, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-12-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-13-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-27-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-18-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-08-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-02-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	2-02-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	10-20-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-01-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-06-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	8-22-80

Expiration of patents: The patents within the range of numbers indicated below expire during October 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,209,369 to 3,214,766, inclusive

Plant Patents ..... Numbers 2,558 to 2,565 inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,105

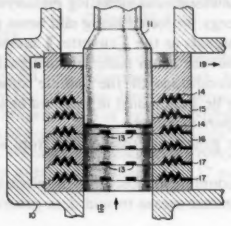
CONTROLLED PRESSURE DROP VALVE

Charles L. Bates, Jr., P.O. Box 100C, Springville, Utah 84663

Original No. 3,977,435, dated Aug. 31, 1976, Ser. No. 444,524, Feb. 21, 1974. Application for reissue Aug. 30, 1978, Ser. No. 938,163

Int. Cl.³ F16K *47/08*

U.S. Cl. 137—625.3 **13 Claims**



13. A valve for high pressure fluids comprising:

a valve housing;

a plunger; and

a plurality of stacked annular disks mounted within said housing, each said disk comprising:

an annular center opening in register with the annular center openings of the remaining disks, said annular center openings together providing a cylindrical cavity that accommodates reciprocating movement of said plunger so as to control the flow of fluid through said stacked disks;

a plurality of substantially circular ridges on at least one face of each said disk;

a plurality of projections on at least one face of each said disk, said projections overlapping the rim of an adjacent disk in order to prevent lateral movement thereof, said projections also spacing the disk from an adjacent disk so as to permit fluid flow therebetween;

a first substantial opening about the inside periphery of each said disk, said first opening communicating with the space between the disk and an adjacent disk; and

a second substantial opening about the outside periphery of each said disk, said second opening communicating with (1) said space between the disk and an adjacent disk and (2) a discharge outlet of said valve.

Re. 31,106

QUARTER TURN INDUSTRIAL FASTENER

Frederick J. Pufpaff, Loudonville, and Cuyler Hoen, Rensselaer, both of N.Y., assignors to Simmons Fastener Corporation, Albany, N.Y.

Original No. 4,212,560, dated Jul. 15, 1980, Ser. No. 54,015, Jul. 2, 1979. Application for reissue Jul. 6, 1981, Ser. No. 280,555

Int. Cl.³ B25G *3/00*; F16D *1/00*

U.S. Cl. 403—353 **13 Claims**

7. An industrial fastener assembly for removably locking together two plates on one-quarter turn of the fastener, including

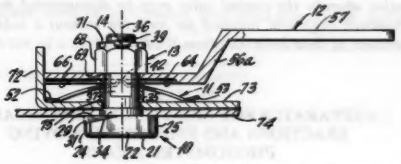
a first plate having a non-round opening therethrough having an elongated slit portion and a shortened slit portion crossing at substantially a right angle thereto;

a second plate having an opening therethrough which opening is adapted to align with the opening of the first plate upon locking together the two plates;

a cam bolt member having a head portion having a top face, a bottom face, a pair of elongated opposite sides and a pair of relatively shortened opposite sides in its width direction at a right angle to said elongated sides so that said elongated opposite sides of said head portion fit through said elongated slit portion in said first plate, said cam bolt member bottom face having at least one cam surface;

said cam bolt member having a shaft portion having at an intermediate position contact means to rotate said shaft, said shaft portion having [adjustment] *securing* means proximate to its end opposite said head portion;

a spring member of resilient material having a hole through which said shaft protrudes and freely rotates therein, said spring member having a pair of oppositely directed raised detents extending substantially outwardly from said hole;



a turning means having external means to permit the turning means to be rotated, said turning means having means to contact said contact means of said cam bolt shaft so that rotation of said turning means will rotate said cam bolt member, said turning means having a body portion in a plane vertical to the axis of said cam bolt shaft having an upper and a lower face, and a series of indentations in said lower face at a substantially equal spacing, said indentations being outwardly directed from said turning means hole, said detent portions of said spring removably detenting in said indentations; and

a fastening member having fastening means which is [removably] attached onto said [adjustment] *securing* means of said cam bolt member;

said spring member exerting pressure between said turning means and said second plate.

Re. 31,107

FEEDBACK SHAFT EXTENDING BETWEEN SWASHPLATE AND DISPLACEMENT CONTROL VALVE

John J. Kass, Dubuque, and Donald O. Johannsen, Sherrill, both of Iowa, assignors to Deere & Company, Moline, Ill.

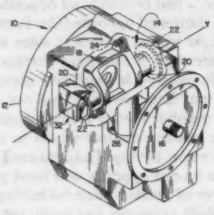
Original No. 4,229,144, dated Oct. 21, 1980, Ser. No. 967,368, Dec. 7, 1978. Application for reissue Jan. 19, 1981, Ser. No. 226,574

Int. Cl.³ F04B *49/00, 1/30*

U.S. Cl. 417—222 **3 Claims**

13. In a control for selectively adjusting a swashplate, of an axial piston pump or motor, angularly about a first axis and including a hydraulic actuator means coupled to the swashplate and located together within a transmission housing; a normally balanced control valve located exteriorly of the housing and connected to the actuator means, to a sump defined by the housing and to a source of fluid pressure and normally blocking the actuator means from the sump and source of fluid pressure, a control input means connected to the control valve for selectively effecting an unbalanced condition wherein fluid pressure is routed to the actuator means to cause the latter to effect a preselected change in the angular position of the swashplate, and a feedback shaft connected between the swashplate and the control valve for restoring

the latter to its balanced condition upon the swashplate undergoing said preselected change in angular position about said axis, the improvement residing in said feedback shaft and including a fluid passage extending lengthwise through the feedback shaft and serving as the sole fluid connection between the control valve and



the sump and a check valve located in said drain passage for preventing fluid from flowing from the housing toward the control valve whereby the control valve may be disconnected from the feedback shaft and removed for servicing without a substantial amount of fluid being lost from the housing.

Re. 31,108

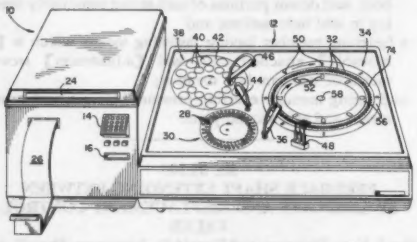
APPARATUS FOR MONITORING CHEMICAL REACTIONS AND EMPLOYING MOVING PHOTOMETER MEANS

Guenter Ginsberg, Miami, Fla.; Thomas Horne, Harpenden, England, and Robert L. Kreiselman, Melbourne, Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Original No. 4,234,540, dated Nov. 18, 1980, Ser. No. 69,256, Aug. 24, 1979. Continuation of Ser. No. 846,337, Oct. 8, 1977, Pat. No. 4,234,538, which is a continuation-in-part of Ser. No. 808,166, Jun. 20, 1977, abandoned. Application for reissue Aug. 27, 1981, Ser. No. 296,779

Int. Cl.³ G01N *21/24, 1/14*

U.S. Cl. 422—64 **15 Claims**



1. Apparatus for monitoring chemical reactions occurring in a plurality of liquid or the like sample substances carried [in] *by* a plurality of respective [cuvettes whose walls are at least to some extent capable of transmitting radiant energy] *sample support members* which comprises:

A. support means,

B. a rotor and a turntable mounted coaxially on the support means and capable of rotation relative to the support means and relative to one another, one of said rotor and turntable being journalled on the other, said other being journalled on said support means,

C. a plurality of [radiant energy transmissive cuvettes] *sample support members* mounted to the turntable and disposed in a circular arrangement about said axis and adapted to have sample substances producing chemical reactions carried [in] *by* at least some of said [cuvettes] *sample support members,*

D. first drive means for rotating the turntable on its axis in a first program of rotation whereby the [cuvettes] *sample support members* describe an annular path as the turntable rotates,

E. second drive means for rotating the rotor on said axis in a second program of rotation in which the number of total revolutions of the rotor for a given period of time is greater than the number of revolutions of the turntable for the same period of time,

F. photometer means mounted on the rotor and defining at least one beam path for radiant energy which extends at least through said annular path such that the beam path includes and traverses at least a portion of the sample substance which may be [contained in] *carried by* any of said [cuvettes] *sample support members* which intersects such beam path during rotation of the turntable or rotor,

G. the photometer means including means responsive to any radiant energy projected along said beam path to produce electrical signals as the [cuvettes] *sample support members* intersect the beam path, which signals are related to chemical conditions of the sample substances, if any, which may be [contained in] *carried by* said [cuvettes] *sample support members,*

H. means for generating usable data from any such signals and

I. means for coupling at most all of the electrical signals from said photometer means to said data generating means.

Re. 31,109

SINGLE MAGNETIC STRAY FIELD SENSOR WHOSE SIGNALS ARE DIFFERENTLY ATTENUATED IN TWO CHANNELS AND THEN COMPARED

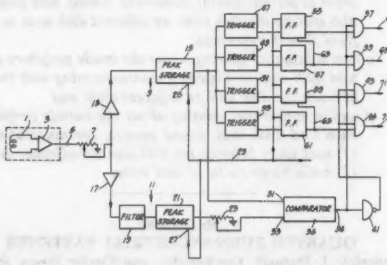
Friedrich M. O. Förster, In Laisen 70, and Alfons Kalisch, Fliederweg 3, both of D-7410 Reutlingen 1, Fed. Rep. of Germany

Original No. 4,117,403, dated Sep. 26, 1978, Ser. No. 780,401, Mar. 23, 1977. Application for reissue Jun. 23, 1980, Ser. No. 162,051

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1976, 2612697

Int. Cl.³ G01N *27/82*

U.S. Cl. 324—240 **12 Claims**



4. Apparatus for defects testing of metal tube, comprising:

means for magnetizing the tubes;

a single magnetic sensing element scanning the tube surface and producing signals responsive to defects in the tubes;

a first channel connected to the single sensing element, said channel including first signal storage means;

a second channel connected to the single sensing element, said second channel including filter means and a second signal storage means connected with the filter means, said filter attenuating the signals of external defects and internal defects to a different degree; and

said signal storage means consisting of analog storage elements and the outputs of the first and second channels being connected to a comparator.

PLANT PATENTS

GRANTED DECEMBER 21, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,966

BLACK WALNUT TREE

Walter F. Beineke, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Apr. 16, 1981, Ser. No. 254,906

Int. Cl.³ A01H *5/03*

U.S. Cl. Plt.—32 **1 Claim**

1. A new and distinct variety of black walnut tree substantially as illustrated and described, which has good timber quality, is very fast growing, has fair central stem tendency, earlier than average in time of leafing, pistillate flowers early, pollen sheds mid-season, produces abundant annual crops of large-size nuts; averages 2 per cluster, the percentage of weight of kernel to nut averages approximately 17 percent; nut bearing begins early in life of tree.

4,967

CHRYSANTHEMUM NAMED DARK WESTLAND

Jacques C. M. van der Knaap, De Lier, Netherlands, assignor to Pan American Plant Company, Parrish, Fla.

Filed Jun. 12, 1981, Ser. No. 272,971

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct variety of chrysanthemum plant, substantially as herein shown and described, characterized by the spider form of its flowers with quill-shaped ray florets which are of a darker color than that of its parent and having a much better color retention character.

PATENTS

GRANTED DEC. 21, 1982

ERRATA

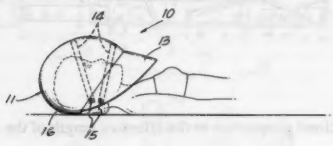
For CLASS	See PATENT NO.
419–026	4,364,162
604–096	4,364,394
604–010	4,364,395
181–120	4,364,446
525–127	4,364,860
548–567	4,364,867
378–049	4,365,155
378–084	4,365,156
378–099	4,365,161
378–170	4,365,162

PATENTS

GRANTED DECEMBER 21, 1982

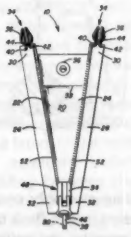
GENERAL AND MECHANICAL

4,364,123
COMBINATION SUN SHADE AND ARTICLE CARRY-ALL
Doris L. Sam, 927 Fernrest Dr., Harbor City, Calif. 90710
Filed Nov. 17, 1980, Ser. No. 207,207
Int. Cl.³ A42B *1/06*
U.S. Cl. 2—209.1 **5 Claims**



1. A sun bathing accessory having an elongated scoop-like main body of opaque plastic material shaped and sized to accommodate and shade the head of a sunbather, said main body having a cup-shaped chamber at the rear end thereof substantially larger than the user's head and coiffeur and provided with a canopy at its forward end adapted to overlie and shade the user's face and neck, and carrying handle means extending crosswise of the midlength of said main body for use in stowing and carrying said accessory and personal articles placed therein when said accessory is not in use as a sunshade.

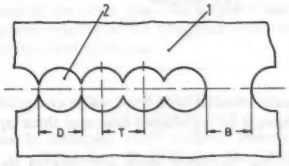
4,364,124
TROUSER FLY CONSTRUCTION
Alex J. Barna, 1216 Crawford St., Duquesne, Pa. 15110
Continuation-in-part of Ser. No. 128,903, Mar. 10, 1980, Pat. No. 4,259,750. This application Apr. 1, 1981, Ser. No. 250,014
Int. Cl.³ A41D *1/06*
U.S. Cl. 2—234 **10 Claims**



1. An article of wearing apparel comprising,
a trouser construction including a waist portion with a fly attached thereto,
closure means associated with said fly for opening and closing said fly,
a flap portion connected to said waist portion for movement into and out of position overlying said closure means,
said flap portion having an outer surface and an inner surface overlying said closure means to conceal said closure means when said fly is closed,
imitation closure means secured to said flap portion outer surface for stimulating the appearance of said trouser construction having said fly in an open position, and
said imitation closure means including fastener elements secured to said flap portion outer surface in spaced relation to form with said flap portion an imitation open fly construction overlying and concealing said fly.

8. A method of making a trouser construction comprising the steps of,
positioning a zipper assembly on the outer surface of a trouser flap portion that overlies and conceals a trouser fly,
twisting a pair of material strips each supporting a row of zipper teeth,
positioning the twisted material strips in abutting relation and between the rows of zipper teeth extending the length of the material strips,
securing the abutting material strips to the outer surface of the trouser flap portion, and
extending the rows of zipper teeth in spaced relation from the upper ends of the zipper teeth toward one another to the lower end of the zipper teeth at the bottom of the trouser flap portion to simulate a trouser fly in an open position.

4,364,125
STIFFENING INSERT FOR WEARING APPAREL
Erich de Riz, Heppenheim, and Wolfgang Ringel, Rimbach, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany
Filed Mar. 24, 1981, Ser. No. 247,056
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013764
Int. Cl.³ E03D *11/00*
U.S. Cl. 2—255 **8 Claims**

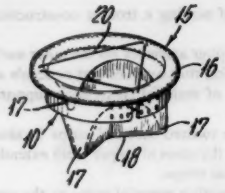


1. A stiffening insert for wearing apparel, which comprises: a stiff, flat material having an outline appropriate for the wearing apparel and having at least one series of internal multiple openings parallel to the long axis of the material, wherein each opening is defined by a set of circular holes which overlap each other, and wherein the portions of material between adjacent openings of a series have widths which are smaller than twice the diameter of the circular holes.

4,364,126
HEART VALVE WITH REMOVABLE CUSP PROTECTOR BAND
Jonathan J. Rosen, Fountain Valley; George M. Acosta, Long Beach, and Christopher J. Bowman, Newport Beach, all of Calif., assignors to Vascor, Inc., Anaheim, Calif.
Filed Jul. 28, 1981, Ser. No. 287,606
Int. Cl.³ A61F *1/22*
U.S. Cl. 3—1.5 **18 Claims**

1. In a prosthetic heart valve comprising a cylindrical stent, sheet material overlying the stent and extending inwardly to form a closure within the confines of said stent, and a sewing

cushion encircling the stent at one end thereof, the improvement comprising a removable protective band circumscribing



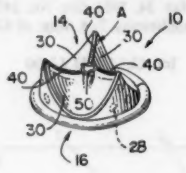
the stent and overlying the sheet material immediately adjacent said sewing cushion.

4,364,127

TRILEAFLET TYPE PROSTHETIC HEART VALVE

William S. Pierce, Hummelstown; Craig B. Wisman, Harrisburg, and James H. Donachy, Annville, all of Pa., assignors to Research Corporation, New York, N.Y.

Filed Oct. 2, 1981, Ser. No. 308,168
Int. Cl.³ A61F 1/22
U.S. Cl. 3—1.5 **6 Claims**



1. A prosthetic trileaflet type heart valve comprising:

1. a frame having a ring shaped base and three upstanding struts;

said base further provided with a groove in its external surface to receive a thin fabric or the like suture element;

2. a one piece membrane formed on said frame to provide three leaflets of the valve;

said formed leaflets being heat set in a partially open position to reduce the pressure required to open the leaflets by blood flowing through the prosthetic valve.

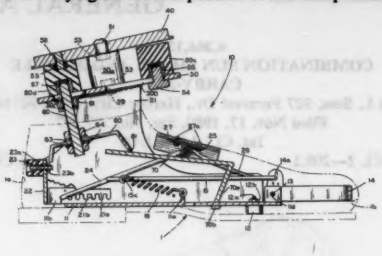
4,364,128

ARTIFICIAL FOOT

Thomas A. Mummert, Toledo, Ohio, assignor to Jobst Institute, Inc., Toledo, Ohio

Filed Aug. 31, 1981, Ser. No. 297,996
Int. Cl.³ A61F 1/08
U.S. Cl. 3—6.1 **13 Claims**

10. An artificial foot adapted for insertion in a conventional shoe comprising, in combination: a sole plate insertable in the bottom portions of a shoe, upstanding means secured to said sole plate for simulating the ankle portions of a foot, means for attaching said ankle simulating means to a prosthesis attachable to the leg stump, an instep simulating member, linkage means for positioning said instep simulating member in a plurality of vertical positions relative to said sole plate, means for longitudinally varying the point of securement of said ankle simulating means to said sole plate to change the effective length of the artificial foot, and means responsive to said last mentioned means for varying the vertical position of said instep simulating



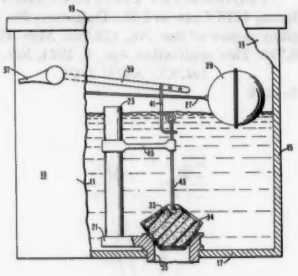
means in direct proportion to the effective length of the artificial foot.

4,364,129

WATER SAVING FLUSH SYSTEM

John S. Schonger, R.D. 1 Box 231A, West Hurley, N.Y. 12491

Filed Dec. 12, 1977, Ser. No. 859,677
Int. Cl.³ E03D 1/14
U.S. Cl. 4—324 **5 Claims**



1. A toilet tank flushing assembly operable to discharge a controlled volume of water from a flush tank into a toilet bowl in accordance with the quantity and nature of the waste material to be flushed from the bowl comprising, in combination,

a flush tank,

a handle mounted on said flush tank,

a valve seat disposed in the exit port of said tank,

a flush valve adapted to engage said valve seat and thereby close said tank exit port,

said flush valve having a substantially hollow interior portion with an opening in the bottom thereof,

said interior portion of said flush valve including a water absorbing material adapted to modify the weight of said valve by controlling the amount of water admitted through said bottom portion of said flush valve, and

a manually operated lever assembly connecting said handle to said flush valve,

said modified flush valve being adapted to control the buoyancy of said float valve when said float valve is lifted from said valve seat and thereby control the reseating of said flush valve when said handle is released.

4,364,130

CONTAINER FOR DECOMPOSABLE MATERIAL SUCH AS EXCREMENT

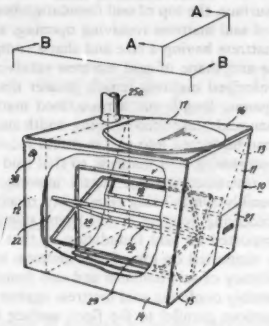
Nils C. Persson, Östersund, Sweden, assignor to Inventor Invest AB, Östersund, Sweden

Continuation of Ser. No. 198,018, Jul. 7, 1980, abandoned. This application Jan. 7, 1982, Ser. No. 337,992

Claims priority, application Sweden, Nov. 6, 1978, 7811469; Feb. 1, 1979, 7900891

Int. Cl.³ A47K 11/02

U.S. Cl. 4—449 9 Claims



1. A container for decomposable material such as excrement, comprising a composting chamber (20) with two end walls (11, 12) and a curved bottom (29) the surface of which substantially coincides with a rotational surface, there being a stirring means (26) rotatably mounted and driven by an electric motor (24) and provided with a plurality of stirring members which, during the rotation of the stirring means, move a portion of the composting material (27) along the bottom of the composting chamber, there being an emptying opening (18) in the curved bottom for discharging at least partially decomposed material to a collection container (21), characterized in that the rotational direction of the electric motor (24) and the stirring means (26,26*a*), respectively, is reversible by means of switch means (38) so that, in the normal direction of rotation of the stirring means, feeding takes place in a direction from the top of the emptying opening and downwards, while discharge of at least partially decomposed material takes place by reversing the direction of rotation so that material is fed along the bottom (29) of the container and up to the emptying opening (18) and out through the latter to the collection container (21), and that the stirring members include bar-shaped members (13*b*–13*f*, 50) extending between the end walls along a rotational surface substantially concentric with the bottom surface (29), said rotational surface lying close to the bottom surface, the cross-section of each bar-shaped member having a width which is substantially greater than the radial thickness of the bar-shaped member.

4,364,131

LIQUID RESERVOIR

Robert C. Clerk, 46, Cullen Dr., Glenrothes, Fife, Scotland (KY6 2JJ)

Filed Aug. 15, 1980, Ser. No. 178,681

Claims priority, application United Kingdom, Aug. 17, 1979, 7928712

Int. Cl.³ E04H 3/16, 3/18

U.S. Cl. 4—495 15 Claims

1. A liquid reservoir comprising

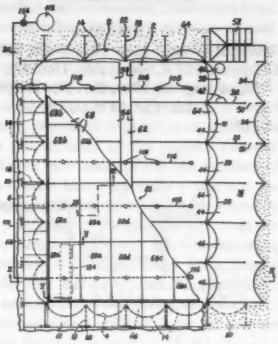
an open-topped container having at least one side wall, a first floor fixed relative to said at least one side wall and a second floor above the first floor which is able to move upwardly and downwardly relative to said at least one side wall,

said wall and floors being of a rigid material which is water impermeable,

said second floor comprising a plurality of downwardly-open compartments,

means for varying the specific gravity of the second floor between a first value less than and a second value greater than the specific gravity of the liquid in the reservoir,

said specific gravity-varying means comprising means for supplying gas under pressure into said downwardly-open compartments, at least one trimming tank mounted on in



one of said downwardly-open compartments of the second floor and means for introducing liquid from the reservoir into said at least one trimming tank and for displacing liquid from said at least one trimming tank to control the inclination of said second floor, and

at least one passageway between first and second spaces in the container situated repectively above and below the second floor enabling liquid to flow from one end of said spaces to the other when the height of said second floor is adjusted relative to the first floor employing said specific gravity-varying means.

4,364,132

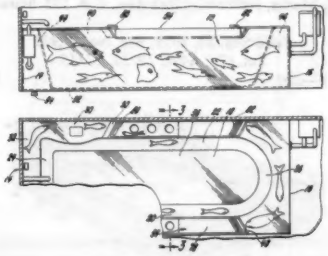
AQUARIUM BATH

Lawrence D. Robinson, 11077 Minden, Detroit, Mich. 48205

Filed Aug. 29, 1980, Ser. No. 182,818

Int. Cl.³ E03C 1/20; A47K 3/02

U.S. Cl. 4—546 9 Claims



1. An aquarium bath comprising:

a tub having inner front, rear, and side walls united to form a bathing compartment;

said tub further having outer front, outer rear and outer side walls;

a ledge extending along the upper perimeter of at least said inner and said outer front walls and of said side walls;

a base extending between and uniting the outer and inner front and side walls and the outer and inner rear walls;

said walls, said base and said ledge being united to form a continuous water tight water chamber between at least said inner front and inner side walls and said outer front and outer side walls; and

an access and aeration means for said water chamber including a cover in said ledge formed between one of said outer side walls and said bathing compartment to provide for admission of air to the water in said chamber and for servicing said chamber while water is contained in said chamber.

4,364,133

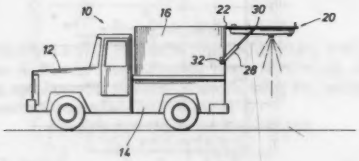
CAMPER DOOR AND SHOWER SYSTEM

Barbara A. Gunter, 253 E. Sunnyside, Houston, Tex. 77076

Filed Aug. 13, 1981, Ser. No. 292,589

Int. Cl.³ A47K 3/22

U.S. Cl. 4—617 **8 Claims**



1. In a camper vehicle used for recreational purposes, the improvement comprising:

a water storage tank being pivotally connected to the exterior portion of said camper vehicle and defining a water storage chamber, said water storage tank being positionable to a substantially horizontal position and a substantially vertical position, when in the vertical position said water storage tank defines a door for said camper vehicle, and

shower head means being secured to said water storage tank and being in communication with said water storage chamber, said shower head means being manually controllable to drain water from said water tank means by gravity to enable a person standing beneath said horizontally positioned door to take a shower bath.

4,364,134

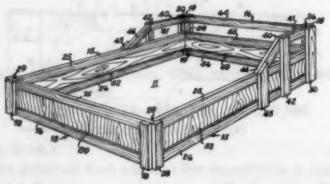
BED CONSTRUCTION

Robert J. Marks, 3450 SW. 126th Ave., C.B. 152, Miramar, Fla. 33027

Filed Sep. 24, 1979, Ser. No. 77,923

Int. Cl.³ A47C 19/12, 27/15

U.S. Cl. 5—201 **9 Claims**



1. A bed construction adapted to be supported on a generally horizontal floor surface comprising:

a frame assembly defining a generally vertically extending open top mattress receiving opening therethrough having a prescribed opening length and a prescribed opening width so that, when said frame assembly is supported on the floor surface, said mattress receiving opening extends from the floor surface through said frame assembly to a prescribed opening height at the open top thereof;

a resilient foundation having a size and shape complementary to the size and shape of said mattress receiving opening removably received in said mattress receiving opening in said frame and supported on the floor surface, said frame assembly confining said foundation against movement in all directions parallel to the floor surface to maintain said foundation in position on the floor and said foundation having a foundation height less than said prescribed opening height so that, when said foundation is positioned within said mattress receiving opening and supported on the floor surface, the top of said foundation lies below the open top of said mattress receiving opening; and

a resilient mattress having a size and shape complementary to the size and shape of said mattress receiving opening with a prescribed mattress length greater than said prescribed opening length and a prescribed mattress width greater than said prescribed opening width such that said mattress can be forced into said mattress receiving opening by compressing said mattress so that said mattress is positively restrained against lateral movement by said frame assembly while being removably received in said mattress receiving opening in said frame assembly on top of and supported on said foundation so that a person is resiliently supported on top of said mattress by the combined resiliency of said mattress and said foundation, said frame assembly confining said mattress against movement in all directions parallel to the floor surface to maintain said mattress in position on top of said foundation and said mattress having a mattress height greater than the difference between said foundation height and said opening height so that, when said mattress is positioned on top of said foundation within said mattress receiving opening, said mattress projects above the top of said mattress receiving opening.

4,364,135

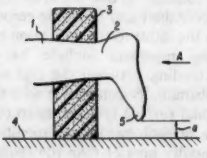
ORTHOPEDIC DEVICE TO PREVENT DISTORTION OF INFANT'S FEET

Monika Emmerich nee Giesche, Wildwechsel 4, 3167 Burgdorf-Ehlershausen, Fed. Rep. of Germany

Filed Nov. 28, 1980, Ser. No. 211,178

Int. Cl.³ A61F 5/00; A47G 9/00

U.S. Cl. 5—443 **4 Claims**



1. An orthopedic device which permits the wearer to retain full range of motion by his ankle when his knee bears against an underlying supporting surface and his feet are pointed naturally downwardly, the device comprising: a body composed of a relatively compressible material and having the configuration of a cylinder which has a greater diameter than its thickness; an opening extending through said thickness of said cylinder, said opening being so dimensioned that the device can be placed over the wearer's foot and worn by him at a location above the foot proximate his ankle in a comfortable manner and cannot be readily dislocated by him when his knee bears against an underlying supporting surface with his leg between the knee and ankle being generally parallel to such supporting surface; the dimension of said body from said opening to said body's periphery being sufficient that said periphery is spaced beyond the wearer's toes when said body is compressed by the wear-

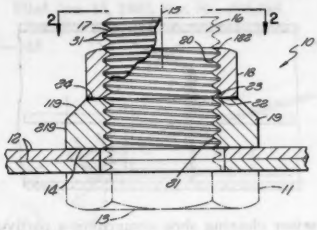
er's weight thereon between said opening and said periphery proximate the wearer's toes which therefore do not touch the underlying supporting surface.

4,364,136

FORMATION OF THREADED ELEMENTS HAVING A SELF-LOCKING ACTION

Mark Hattan, Orange, Calif., assignor to William P. Green, Pasadena, Calif., a part interest

Filed Dec. 2, 1980, Ser. No. 212,228
Int. Cl.³ B21D *53/24*
U.S. Cl. 10—86 A 9 Claims



1. The method of forming a fastener that comprises:

positioning two elements having similar internal threads on an external thread which is dimensioned to fit said internal threads loosely, in a relation allowing each of said elements if engaged individually with the external thread to shift axially relative thereto through a substantial distance without relative rotation or deformation of the engaged threads;

locating said two elements on said external thread in predetermined relative positions in which they are turned so that their internal threads are not true helical continuations of one another, and in which said two elements limit axial and rotary movement of one another and their threads bear in opposite axial directions against the external thread to eliminate looseness between the threads;

attaching said two elements together while in said predetermined relative positions on said external thread; and

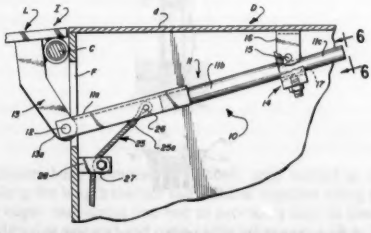
removing the two attached elements from said external thread as a composite integrated unit adapted to have an interfering fit with a threaded part of predetermined size.

4,364,137

RELEASABLE LOCKING DEVICE

Norbert Hahn, Cudahy, Wis., assignor to Rite-Hite Corporation, Milwaukee, Wis.

Filed Oct. 31, 1980, Ser. No. 203,614
Int. Cl.³ E01D *1/00*
U.S. Cl. 14—71.3 9 Claims



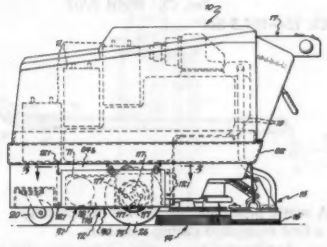
1. A device for releasably locking one member of a pair of hingedly connected members in a predetermined extended first position relative to the second member of the pair, the one member being adapted to normally assume a predetermined second position relative to the second member; said device comprising an elongated rodlike element having one end portion thereof adapted to be pivotally connected to the one member at a location spaced from the hinge connection between the pair of members, said element being provided with an elongated first section disposed adjacent the pivotally connected one end portion and an elongated second section extending longitudinally from said first section, said second section having a smaller circumferential dimension than said first section and corresponding exterior segments of said first and second sections coacting to form a beveled shoulder at least partially encompassing the exterior of said second section; guide means adapted to be adjustably connected to the second member and spaced from the member hinge connection, said guide means being provided with an open-ended passageway through which the sections of the rodlike element slidably extend upon relative movement of the one member, the end of the passageway closest to the pivotally connected end portion of said rodlike element being provided with a beveled surface at least partially delimiting the passageway end, the beveled surface and the beveled shoulder frictionally engaging one another and resisting a predetermined force urging relative movement of the one member from the predetermined first position to the second position; biasing means carried by said guide means and exerting a resilient force on said rodlike element causing the latter to laterally shift relative to the guide means passageway only when the second section of the element is aligned within the passageway; and means engaging said rodlike element for applying a predetermined external force thereto effecting endwise movement of said element relative to said guide means and movement of the one member from the predetermined second position to the predetermined first position.

4,364,138

AUTOMATIC FLOOR CLEANING MACHINE WITH REMOVABLE DRIVE CARRIAGE

Steven J. A. Waldhauser, and Richard D. Masbruch, both of Lewiston, N.Y., assignors to Wetrok, Inc., Niagara Falls, N.Y.

Filed Nov. 12, 1980, Ser. No. 206,301
Int. Cl.³ A47L *11/18*
U.S. Cl. 15—50 R 9 Claims

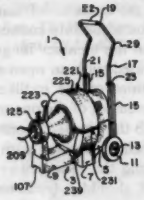


1. An improved floor cleaning machine of the type having a power source, propulsion means connected to said power source including detachable drive wheels for tracking on the floor surface to be cleaned, scrubber means for wetting and cleaning the floor surface, means including a wiper for drying the cleaned surface, and control means operatively associated with said propulsion means, scrubber means and drying means for controlling actuation of said machine, said machine having a normal operating position, wherein the improvement comprises:

(a) said propulsion means being mounted on a removable carriage which is removably secured to said machine, said

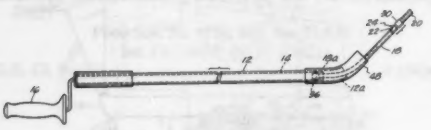
carriage being removable from said machine while the latter is in said normal operating position;
(b) said machine having a frame, said carriage being removably secured to said machine frame; and
(c) wherein said carriage is slidably supported on said frame.

4,364,139
DRUM TYPE SEWER CLEANER
Larry F. Babb, LaGrange, and Walter J. Noveske, Elyria, both of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.
Filed May 7, 1981, Ser. No. 261,367
Int. Cl.[3] B08B 9/02
U.S. Cl. 15—104.3 SN 17 Claims



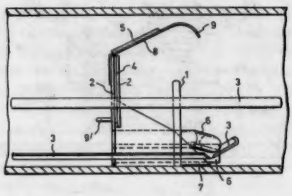
1. In a sewer cleaning machine comprising a frame, a drum mounted on said frame for rotation about a generally horizontal axis, means for rotating said drum, a length of flexible cable in said drum, and a cable guide mounted coaxially with said drum for rotation with respect to said frame and with respect to said drum, said cable exiting said drum through a forward end of said cable guide, the improvement comprising drum tilting means for tilting said drum and said cable guide forward with respect to said frame for removal and replacement of said drum with respect to said frame, said drum tilting means comprising a forward support structure, said forward support structure comprising forward bearing means for rotationally supporting said forward end of said cable guide and pivot means below said forward bearing means for pivotally mounting said forward support structure to said frame.

4,364,140
PIPE CLEANOUT TOOL
Lawrence F. Irwin, 12860 San Fernando Rd., Sylmar, Calif. 91342
Filed May 12, 1981, Ser. No. 262,958
Int. Cl.[3] B08B 9/02
U.S. Cl. 15—104.3 SN 10 Claims



1. A waste pipe cleanout device comprising:
(a) a first elongated casing member;
(b) an elongated drive member telescopically receivable in said first casing member;
(c) interengaging means affixed to one end of said drive member for rotating said member;
(d) a coupling leader connected to the other end of said drive member and adapted to project a limited distance from said casing member when said drive member is fully telescopically received therewithin, said coupling leader being rotatable with said drive member and having first interlocking means at its free end for removably interlocking together therewith a length of flexible coiled spring; and
(e) a length of flexible coiled spring having at one end thereof a second interlocking means adapted to mate with said first interlocking means whereby rotation of said drive member causes rotation of said coiled spring.

4,364,141
SEWER CLEANING SHOE WITH DAM AND JET NOZZLES
Norman W. Crane, Thames Ditton, England, assignor to Thames Water Authority, London, England
Filed Jun. 3, 1981, Ser. No. 270,208
Claims priority, application United Kingdom, Jun. 13, 1980, 8019366
Int. Cl.[3] B08B 9/04
U.S. Cl. 15—104.06 R 11 Claims



1. A sewer cleaning shoe comprising a partly-cylindrical framework for location in the invert of a sewer; transverse barrier means connected to said framework, said transverse barrier means being arranged to substantially fill the lower part of said sewer to form a dam extending across said sewer, said transverse barrier means having a top edge arranged below the top of said sewer; and, an orifice through said transverse barrier means adjacent its base, whereby a part of the flow of effluent carried by said sewer is jetted through said orifice to scour the detritus and sedimentary matter from said invert of said sewer and a part of said flow of effluent flows over said top of said transverse barrier means to entrain and carry away said scoured detritus and sedimentary matter.

4,364,142
BODY SQUEEGEE
Randy L. Pangle, 163 S. Elm, Manteno, Ill. 60950
Filed Dec. 3, 1980, Ser. No. 212,269
Int. Cl.[3] A46B 15/00, 17/08
U.S. Cl. 15—117 6 Claims

1. A body squeegee comprising in combination an elongated first portion adapted to serve as a handle, one end of said handle providing a head portion with at least one side of the head portion including a peripherally extending resilient and

flexible blade member of non-porous rubber like material, said blade member being inset in said head portion periphery so as to form a substantially flat surface relative to the head portion and projecting outwardly from the head member at an acute angle and presenting a sharp and distinct edge with the rubber like material of said blade being sufficiently soft to the feel so as not to scrape or irritate the skin of a user and said blade member being sufficiently self supporting so as to be capable of maintaining its edge while the resilient and flexible blade follows the body contours to remove water from the ordinary parts of the body.

4,364,143

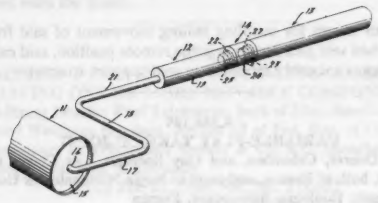
PAINT ROLLER ATTACHMENT DEVICE

Jack Uhl, 400 Lido Dr., Fort Lauderdale, Fla. 33301

Filed Jan. 13, 1981, Ser. No. 224,835

Int. Cl.³ B05C *17/02*; A46B *5/02*

U.S. Cl. 15—145 **7 Claims**



1. An attachment device for facilitating the use and/or storage of a paint roller handle or the like which handle is adapted to carry a roller or the like at one of its ends and which has a female threaded opening at the other end to receive the male threaded end of an extension handle, said attachment device comprising a body substantially shorter than the handle and having a male threaded end complimentary to the female threaded opening of the handle for screw attachment of said body to the handle and a hook portion extending from said body and configured to co-act with the edge of an associated paint tray when the associated handle is placed thereupon to retain the handle from rolling along the tray, said hook portion being sized and located so as not to interfere with the grasping of the handle by a user.

4,364,144

DUSTER HEAD AND METHOD OF MAKING SAME

Theron C. Moss; Richard Mullan, both of Cleveland; Earl Boring, McDonald; Jerry Hjellum, and Alexander Christison, both of Cleveland, all of Tenn., assignors to SECO Industries, Inc., Cleveland, Tenn.

Filed May 18, 1981, Ser. No. 264,469

Int. Cl.³ A47L *13/12*

U.S. Cl. 15—229 AC **16 Claims**

1. A duster head comprising a fabric strip folded at the middle along the length thereof and stitched together along the free side edges and across one end to provide a central sleeve portion closed at one end and open at the other end, a plurality of longitudinally extending rows of yarn fringe material stitched to said central sleeve portion in spaced relation from each other, the yarn in each row overlying the yarn in each adjacent row, and a transversely extending row of yarn material stitched across said closed end of said central sleeve portion on one side thereof.

4,364,145

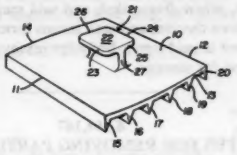
SCRAPING TOOL

John F. Jones, and Catherine C. Jones, both of Rte. 6, Box 1054, Brooksville, Fla. 33512

Filed Jan. 12, 1981, Ser. No. 224,489

Int. Cl.³ A47L *1/06*

U.S. Cl. 15—236 R **2 Claims**



1. A scraping tool having a generally flat, thin, flexible and resilient base, a plurality of flexible and resilient scraping elements extending down from said base and being elongated in spaced, substantially parallel relationship to each other continuously across substantially the full width of the base and terminating in pointed edges at their lower ends, and a handle extending up from the base, said handle being substantially T-shaped in cross-section perpendicular to the direction of elongation of said scraping elements.

4,364,146

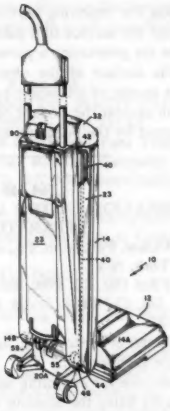
QUICK CLEANOUT FOR UPRIGHT VACUUM CLEANER

Leonard E. Bowerman, Fairfield, Conn., assignor to Electrolux Corporation, Greenwich, Conn.

Filed Nov. 26, 1980, Ser. No. 210,708

Int. Cl.³ A47L *9/00*

U.S. Cl. 15—323 **13 Claims**



1. In an upright vacuum cleaner of the type having a base, suction means mounted in said base, nozzle means formed in said base, an elongated upper body supported on said base for pivotal movement and extending upwardly therefrom, wall means forming a main air duct havng open top and bottom ends and extending longitudinally within said upper body, wall means forming a filter compartment adjacent said main air duct open at the top and extending parallel to said main duct, said

filter compartment having a reduced opening at its lower end, a dust bag removably received in said filter compartment, a removable cover for closing the top end of said main air duct and said filter compartment, means forming an arcuate-shaped air duct within said cover for interconnecting said main air duct with said filter compartment when said cover is in closed position, a lower air duct means supported in said base and connecting said nozzle means with the bottom end of said main air duct, an exhaust air duct connecting the lower end opening in said filter compartment with said suction means, the improvement comprising quick coupling means incorporated in said lower air duct means to remove said lower air duct means for cleaning, a cleanout rod for inserting into said lower air duct means, when dismantled, and said main duct to dislodge clogged debris therein, and wall means forming an open-ended compartment in said upper body for removably receiving said cleanout rod for storage.

4,364,147

APPARATUS FOR REMOVING PARTICLES OF DUST FROM THE SURFACES OF FLAT OBJECTS

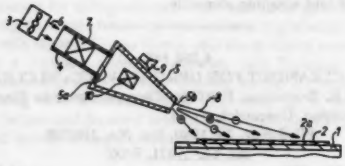
Ernst Biedermann, Taufkirchen, and Heinz Rapp, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,678

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 2938863

Int. Cl.³ A47L *5/14*

U.S. Cl. 15—404 **18 Claims**



1. Apparatus for removing particles of dust or similar contaminants from the surface of a substantially flat object, comprising means for generating a pulsating air stream; means for contacting the surface of the object with the pulsating air stream; and a source of ultrasonic radiation arranged to direct such radiation against the surface of the object while the surface is contacted by the pulsating air stream.

4,364,148

COMBINATION CASTOR AND JACK MEANS APPARATUS

Harry J. McVicker, Pottstown, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,049

Int. Cl.³ B60B *33/06*; F16M *11/24*

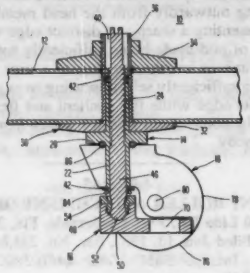
U.S. Cl. 16—32 **2 Claims**

1. A combination castor/jack assembly for supporting a movable frame comprising:

support structure for mounting said assembly to said frame;

jack means for fixing the position of said frame in a predetermined position on the floor, said jack means adjustably mounted to said support structure for movement between a remote position and a floor contact position, said jack means comprises a shaft portion and an elongated foot portion movably attached to a first end of said shaft portion for rotation thereabout,

a first end of said shaft portion is ball shaped and said foot portion comprises an opening which is threaded in part and which is formed to receive said ball shaped first end, said jack means further comprising a threaded tapered nut for holding said ball portion within said opening; and



castor means for enabling rolling movement of said frame when said jack means is in the remote position, said castor means rotatably mounted to said support structure.

4,364,149

VARIABLE-PLAY TAKE-UP JOINT

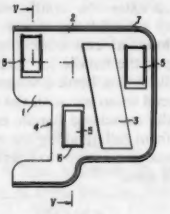
Alain Debret, Colombes, and Guy Soetaert, Les Clayes sous Bois, both of France, assignors to Regie Nationale des Usines Renault, Boulogne Billancourt, France

Filed Jan. 21, 1981, Ser. No. 226,849

Claims priority, application France, Feb. 7, 1980, 80 02668

Int. Cl.³ E05D *13/02*

U.S. Cl. 16—87 R **4 Claims**



1. A variable play take-up joint adapted to be positioned between a support element and a mounted part attached to said support element along a plane different from the plane of said joint, said joint comprising:

a planar member;

a slot in said planar member for the passage of a portion of said mounted part;

at least three elastic play take-up tongues fixed to said planar member for biasing said planar member towards said support element; and

a peripheral rim on said planar member, the height of said rim being greater than the maximum extension of said tongues from said planar member.

4,364,150

HANDLE FOR LUGGAGE AND THE LIKE

Richard C. Remington, Pompton Plains, N.J., assignor to Kidde, Inc. (Presto Lock Company Division), Garfield, N.J.

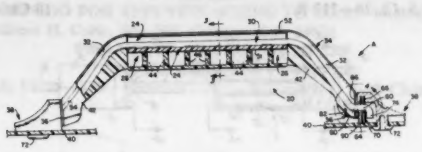
Filed Aug. 6, 1980, Ser. No. 175,915

Int. Cl.³ A45C *13/26*

U.S. Cl. 16—126 **26 Claims**

1. A handle for luggage cases and the like comprising a grip formed of resilient material, the grip having a central portion with an interior cavity formed therein and a plurality of resilient members integrally formed on an interior surface of the

grip within the cavity, the members adapted to be deformed when the handle is grasped to allow the central portion to flex to impart a soft feel thereto, and means for mounting the grip on the case and for supporting the weight of the case, the



mounting means comprising a wire form within the grip and the central portion including an insert positioned within the cavity between the resilient members and the wire form, the resilient members being adapted to be deformed by engagement with the insert.

4,364,151

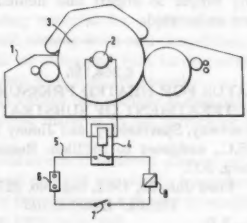
ACCIDENT PREVENTION SYSTEM FOR MACHINES HAVING ONE OR MORE MOVABLE COMPONENTS

Wolfgang Beneke; Paul Teichmann, both of Monchen-Gladbach, and Wolfgang Schubert, Juchen all of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Jul. 22, 1980, Ser. No. 171,821

Int. Cl.³ D01G *31/00*

U.S. Cl. 19—0.2 **9 Claims**



1. In a safety locking system for preventing access to a movable component of a machine during operation thereof, said machine having a cover arranged to assume an open position to permit access to said movable component and a closed position to block access to said movable component; the combination comprising

(a) latching means cooperating with said cover and arranged to assume a latching position preventing said cover from being moved from said closed position to said open position and an unlatching position allowing said cover to be moved from said closed position to said open position;

(b) an electrically energizable actuating element operatively connected with said latching means for setting said latching means from said latching position to said unlatching position upon energization of said actuating element;

(c) an electric energizing circuit connected to said actuating element; said circuit including in series

(1) a voltage source;

(2) a first circuit breaker forming part of a relay and having an open position as long as said relay is energized and a closed position as long as said relay is de-energized;

(3) an arbitrarily operable, normally open second circuit breaker; and

(d) motion detecting means operatively connected with said movable component; said motion detecting means having an output connected to said relay for maintaining said relay energized as long as said movable component is in motion and for maintaining said relay de-energized as long as said movable component is at a standstill, whereby said latching means is set into said unlatching position solely during standstill of said movable component and a simultaneous closing of said arbitrarily operable, normally open second circuit breaker.

4,364,152

WEB DIVIDING DEVICE

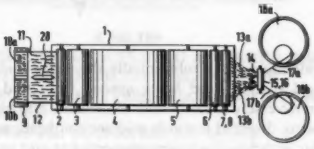
Rudolf Rauschen, and Ludwig Schellen, both of Monchen-Gladbach, Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Jun. 23, 1980, Ser. No. 162,390

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925397

Int. Cl.³ D01G *15/40, 15/46*

U.S. Cl. 19—105 **4 Claims**



1. In a carding machine including a vertical tuft feed chute, a supply table on which a fiber lap discharged by the feed chute is forwarded in a direction of advance, a carding unit arranged downstream of said supply table as viewed in the direction of advance and receiving said fiber lap from said supply table and discharging a fiber web divided into side-by-side arranged web parts and a plurality of sliver forming trumpets each receiving a separate one of said web parts, the improvement comprising a dividing device having a vertically oriented tuft divider supported in said feed chute, said tuft divider separating said feed chute into vertically extending feed chute parts situated side-by-side as viewed in said direction of advance, whereby said fiber lap discharged by said feed chute is divided into side-by-side positioned fiber lap parts.

4,364,153

APPARATUS FOR REMOVING WASTE FROM A FIBER PROCESSING MACHINE

Wolfgang Beneke; Walter Jäger, and Paul Teichmann, all of Monchen-Gladbach, Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Sep. 29, 1980, Ser. No. 196,109

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950367

Int. Cl.³ D01G *15/82*

U.S. Cl. 19—107 **12 Claims**

1. A carding machine having length and width dimensions, comprising in combination:

(a) a plurality of rotary roll and drum components arranged in said length dimension and each having a rotary axis oriented parallel to said width dimension;

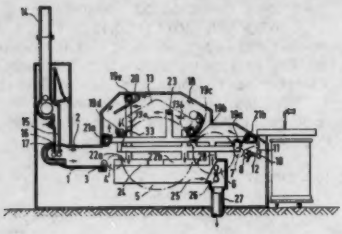
(b) a shroud extending along said length dimension and enclosing said components on top and along opposite sides;

(c) a blower head situated in a radial space bounded, at opposite sides of said blower head, by said shroud and a periphery of one of said components; said blower head having a defined blower opening oriented parallel to and extending along substantially the entire width dimension;

(d) air pressurizing means connected to said blower head for introducing pressurized air into said blower head for

discharging said pressurized air through said blower opening;

(e) a suction head situated in a radial space bounded, at opposite sides of the suction head, by said shroud and a periphery of one of said components; said suction head having a defined suction opening oriented parallel to and



extending along substantially the entire width dimension; said suction head being spaced from said blower head transversely to said width dimension; said blower opening being directed towards said suction head; and

(f) air withdrawing means connected to said suction head for withdrawing air, flowing in said space from said blower head, through said suction opening.

4,364,154

FALLER BARS

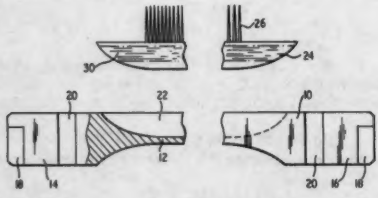
Norman Rushworth, Shipley, England, assignor to Plastex (Bradford) Limited, Bradford, England

Filed Nov. 6, 1980, Ser. No. 204,468

Claims priority, application United Kingdom, Sep. 26, 1980, 8031073

Int. Cl.³ D01G 5/14

U.S. Cl. 19—129 R **3 Claims**



1. A method of manufacturing a pinned strip-type faller bar comprising the steps of:

(a) applying a hot melt adhesive in molten condition to at least one of the flanks of a pinned plastic strip, the adhesive having a low melting temperature such that in its molten condition the adhesive will not damage the plastic strip;

(b) allowing the adhesive to solidify on the pinned plastic strip;

(c) heating the faller bar;

(d) placing said pinned plastic strip in the groove in said faller bar;

(e) activating the adhesive by heat derived from said faller bar to cause the strip to adhere thereto.

4,364,155

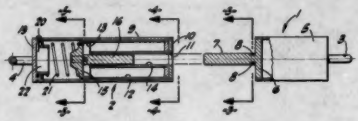
JEWELRY CLASP

Walter Synowicki, 2016 W. Lodi Ave., Lodi, Calif. 95240

Filed Nov. 3, 1980, Ser. No. 203,272

Int. Cl.³ A44B 19/00

U.S. Cl. 24—217 R **10 Claims**



9. A clasp comprising a male unit having a longitudinal body, a female unit having a longitudinal body, the bodies being adapted to be disposed end-to-end, a tongue secured to and projecting from the inner end of the male body, the female body including an inner end wall having a slot configured and adapted for the projection therethrough, in close-fitting but slidable relation, of the tongue when the latter is inserted into the female body upon relative longitudinal movement of the bodies into substantially end abutment, the inner-end portion of the tongue being formed on opposite sides with laterally opening notches, the notches alining with the inner end wall of the female body when the tongue is inserted thereinto, and mechanism in the female body operative, in response to said insertion of the tongue, to impart limited rotation to the tongue in a direction to seat the adjacent portions of the said inner end wall in the notches whereby to latch the clasp; said mechanism including, within the confines of the female body, spring means operative by torque to impart said limited rotation to the tongue when so inserted.

4,364,156

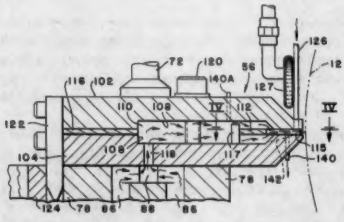
APPARATUS FOR HEATED PRESSURIZED FLUID STREAM TREATMENT OF SUBSTRATE MATERIAL

John M. Greenway, Spartanburg, and Jimmy L. Stokes, Moore, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 23, 1981, Ser. No. 227,838

Int. Cl.³ D06C 23/00

U.S. Cl. 26—2 R **5 Claims**



1. In apparatus for treating a relatively moving substrate material by application of discrete streams of pressurized heated fluid to selected surface portions of the substrate to impart a visual effect thereto, and including an elongate fluid distributing manifold positioned across the path of relative movement of the substrate, said manifold defining an elongate fluid receiving compartment and a plurality of fluid discharge outlet channels disposed in parallel spaced relation along the compartment to direct discrete streams of pressurized fluid against the surface of the relatively moving substrate, and means for directing pressurized cool fluid into selected of the heated fluid discharge outlet channels to selectively block the passage of heated fluid therethrough; the improvement therewith comprising fluid passage means for directing pressurized heated fluid from said fluid receiving compartment through

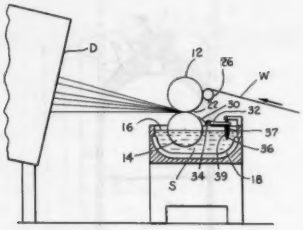
wall portions of the manifold adjacent the fluid discharge outlet channels to heat the wall portions adjacent the channels.

4,364,157

METHOD FOR APPLYING SIZING TO WARP YARNS

William H. Cutts, Box 748, Clemson, S.C. 29631

Filed Nov. 20, 1980, Ser. No. 208,538
Int. Cl.³ D06B *1/14, 15/00*
U.S. Cl. 28—179 10 Claims



1. A method of treating individual textile yarns being supplied from a warp beam which includes the steps of removing the warp yarn ends from the warp beam, subjecting said individual warp yarn ends to a sizing process and drying said warp ends prior to said warp yarns being subjected to a weaving process on a weaving loom, wherein said sizing process comprises:

providing a sizing material for application to individual warp yarn ends coming from said warp beam;

providing a pair of elongated rolls having a nip between which said warp yarn ends are passed;

biasing said rolls against one another at said nip;

applying said sizing material to the surface of one of said rolls;

providing a predetermined metered amount of said sizing material on said one roll at said nip by removing excess sizing material from said one roll prior to reaching said nip and said warp yarn ends; and

said predetermined amount of sizing material corresponding to the amount of sizing to be placed on said yarn ends individually generally without any excess;

delivering said warp yarns coming from said warp beam to said nip of said rolls;

pressing said predetermined amount of sizing material into said yarns from one side thereof for sizing said individual warp yarn ends without rollback of sizing material on said warp yarn ends,

whereby said sizing remains substantially on the same side of said warp yarn ends that it was applied and the amount of energy required during subsequent drying of said warp yarn ends is reduced.

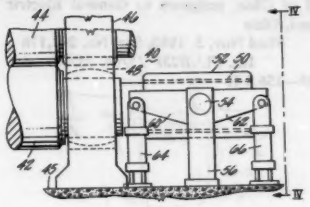
4,364,158

ROLL BENDING APPARATUS

Herbert W. Bainton, Woodbridge, Conn., assignor to USM Corporation, Farmington, Conn.

Filed Sep. 2, 1980, Ser. No. 182,875
Int. Cl.³ B21B *13/14*
U.S. Cl. 29—116 AD 2 Claims

1. A roll bending apparatus for a calender roll machine comprising: a roll journaled in bearings pivotable in frames to accommodate bending of the roll, means acting on at least one end of the roll for inducing a couple to bend the roll carried by the bearings, the couple inducing means comprising a pair of pressurizable piston and cylinder units each pivotally secured at one end to the frame and pivotally secured at the other end to a bushing on said roll end, the units being adapted to apply



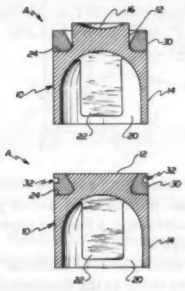
oppositely directed forces to effect the couple on the roll without adding any appreciable load to said bearings.

4,364,159

METHOD FOR MANUFACTURING A FORGED PISTON WITH REINFORCED RING GROOVE

W. Philip Holcombe, Chagrin Falls, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Jul. 14, 1980, Ser. No. 167,850
Int. Cl.³ B23P *15/10*
U.S. Cl. 29—156.5 R 13 Claims



1. An improved method of producing an aluminum alloy piston having a ferrous ring reinforcement comprising the procedural combination of steps of:

providing a generally cylindrical aluminum alloy piston slug having an annular shoulder between the head end and the skirt with the smaller diameter of the annular shoulder defining the outer diameter of the head end and the shoulder defining an annular surface transverse to the axis of the piston slug,

solution heat treating the aluminum alloy piston slug,

rapidly cooling the solution heat-treated piston slug to create a super-saturated aluminum alloy solid solution,

preheating a ferrous ring to a temperature which is higher than the head end temperature during use of the piston in an engine to expand the ring temporarily and to provide an inner ring diameter larger than the outer diameter of the head end,

preheating the cooled, solution heat-treated piston slug to a working temperature which is lower than the head end temperature during use of the piston in an engine,

telescopically assembling the preheated and temporarily expanded ferrous ring on the head end of the preheated piston slug against the shoulder and

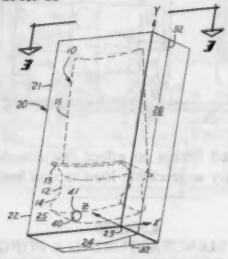
forging to cause the super-saturated aluminum alloy solid solution to flow axially and transversely to the axis of the piston slug against the preheated and temporarily expanded ferrous ring.

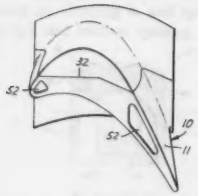
4,364,160

METHOD OF FABRICATING A HOLLOW ARTICLE

James E. Eiswerth; Louis Lievestro, both of West Chester; Richard C. Haubert, and Harvey M. Maclin, both of Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Nov. 3, 1980, Ser. No. 203,176
Int. Cl.³ B23P *15/04, 13/00*
U.S. Cl. 29—156.8 H 16 Claims





1. A method of fabricating a hollow article having an airfoil portion and a base portion, said airfoil portion including a convex side, a concave side, a leading edge and a trailing edge, comprising the steps of:

(a) forming a solid piece of material having dimensions greater than or equal to the dimensions of said article and including upper and lower portions corresponding to said airfoil and base portions respectively of said article;

(b) establishing at least one reference datum on said piece of material;

(c) cutting said piece of material into two parts, the path of the cut extending through said piece of material from said upper portion to said lower portion and defining complementary adjacent surfaces of the two parts, each of said adjacent surfaces comprising only two planar surfaces which intersect along a generally longitudinally extending axis at an angle to each other for facilitating alignment in step (f);

(d) establishing aligning means for said adjacent surfaces of said two parts;

(e) separating said two parts and forming at least one cavity in at least one of said adjacent surfaces for defining a hollow interior of said article;

(f) aligning said adjacent surfaces of said two parts by means of said aligning means and by abutting said complimentary adjacent surfaces of said two parts;

(g) fastening said two parts together; and

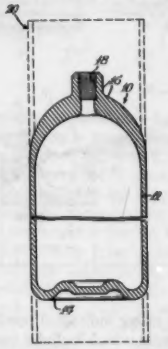
(h) forming external surfaces of said upper portion of said article utilizing said reference datum as a positional reference to form said airfoil portion having said convex side, said concave side, said leading edge and said trailing edge so that said path of said cut intersects only said convex side at points spaced from said leading edge and said trailing edge.

4,364,161

METHOD OF FABRICATING A HIGH PRESSURE TANK

Russell C. Stading, Elgin, Ill., assignor to The Marison Company, South Elgin, Ill.

Filed Dec. 29, 1980, Ser. No. 221,168
Int. Cl.³ B23P *17/00*; B23Q *17/00*; B23K *31/00*
U.S. Cl. 29—407 2 Claims



1. A method of fabricating and testing a tank for storing and transporting high pressure gases comprising the following steps:

(a) providing a steel strip formed into a substantially closed curve configuration with the longitudinal margins thereof in an aligned and adjacent relationship and effecting an electrical resistance seam weld along said adjacent margins to form a length of seam welded tubing;

(b) ultrasonically examining the weld region of the tubing for voids and lack of fusion to 5 percent of the tubing thickness;

(c) effecting a final forming of the tubing to a desired diameter and then subjecting the circumference of the finally formed tubing to a flux leakage test for flaws and critical defects;

(d) hydrostatically testing said tubing for paste-welding;

(e) hot spinning the finally formed tubing to form a tank with a cylindrical sidewall, a bottom, and a neck;

(f) heat treating said tank;

(g) shot blasting said tank;

(h) non-destructively testing said tank with ultrasonic and eddy current techniques to verify that the heat treatment is uniform and proper, that the wall thickness is as desired, and that the weld region continues to be acceptable with no critical defects created as a result of said hot spinning and said heat treating;

(i) spot facing the neck end of the tank, facing the neck to the desired length, turning the diameter for the neck ring when required, predrilling a hole through the neck, core drilling a bore in the neck for subsequent tapping, and tapping the formed bore;

(j) discharging steam into the tank with the tank in inverted position until the inside of the tank is clean and hot;

(k) vacuuming the inside of the tank until it is clean and dry;

(l) pressurizing the tank with air to a predetermined pressure to verify that there is no leakage from the spun closed end of the tank; and

(m) hydrostatically testing the tank to a predetermined pressure level with water and simultaneously examining the tank weld by means of acoustic emission with the tank stressed in response to the internally applied hydrostatic test pressure to determine if a paste weld condition exists.

4,364,162

PROCESS FOR THE AFTER-TREATMENT OF POWDER-METALLURGICALLY PRODUCED EXTRUDED TUBES

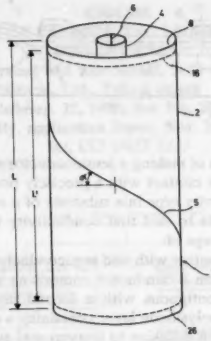
Peter Nilsson, Aby, and Christer Aslund, Torshälla, both of Sweden, assignors to Granges Nyby AB, Nybybruk, Sweden

Filed Sep. 6, 1979, Ser. No. 73,070

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1978, 2838850; Oct. 26, 1978, 2846658

Int. Cl.³ B22F *3/24*

U.S. Cl. 419—26 **14 Claims**



1. A process for the after-treatment of encapsulated powder-metallurgically produced extruded tubes of stainless steel or highly alloyed nickel steels produced, from pressings comprising a tubular capsule of thin, preferably 1 to 2 mm thick, low-carbon sheet steel preferably having a carbon content of less than 0.015% containing a powder of metal or metal alloys or mixtures thereof which after the capsule has been closed, has had its density increased to at least about 80% to about 93% of the theoretical density by isostatic cold pressing under a pressure of at least about 4000 bars, and then has been extruded at high temperatures, preferably around 1200° C., using glass as a lubricant, into tubes having a dense structure, comprising the steps of:

(a) removing glass present on the surface of the encapsulated extended tubes by means of aqueous sulphuric acid;

(b) subsequently cold-working the encapsulated tubes by one of cold drawing and reciprocating rolling;

(c) after step (b), annealing the encapsulated tubes in an oxidizing atmosphere in a manner converting the capsule to scale; and

(d) pickling said tubes in a mild pickling liquid in a manner removing said scale.

4,364,163

METHODS FOR MOUNTING CONNECTION WIRES ON A SOLID ELECTROLYTE CAPACITOR

Hans Schmidt, Barcelona, Spain, assignor to Componentes Electronicos, S.A., Barcelona, Spain

Filed Feb. 15, 1980, Ser. No. 122,056

Claims priority, application France, Feb. 20, 1979, 79 04247

Int. Cl.³ H01G *9/00, 9/24*

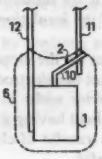
U.S. Cl. 29—570 **4 Claims**

1. A method for mounting anode and cathode connection wires on a solid electrolyte capacitor, said capacitor being cylindrical in shape with a roughly axial anode wire and a peripheral cathode surface, including the following steps:

folding the anode wire to an angle of more than 45°,

arranging connection wires so that they are generally parallel one with the other and with the capacitor axis and that their length differs noticeably from the capacitor height so that the first connection wire contacts the folded part of the anode wire and the second connection wire contacts the capacitor body along an axial line in a radial zone opposite that to which the anode wire is folded,

soldering the connection wires to the anode and capacitor periphery respectively,



coating the capacitor so as to leave only the connection wires visible.

4,364,164

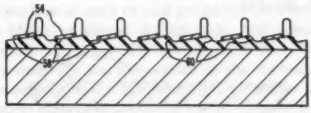
METHOD OF MAKING A SLOPED INSULATOR CHARGE-COUPLED DEVICE

Nathan Bluzer, Silver Spring; Arthur S. Jensen, Baltimore, both of Md.; Dieter K. Schroder, Wilkins Township, Allegheny County, and Paul R. Malmberg, Edgewood, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 966,533, Dec. 4, 1978, which is a continuation of Ser. No. 806,402, Jun. 14, 1977, abandoned. This application May 4, 1981, Ser. No. 260,439

Int. Cl.³ H01L *21/20*

U.S. Cl. 29—571 **9 Claims**



1. A method for making a charge-coupled device that has electrodes deposited on sloped areas of an insulation layer, said method comprising:

growing an insulation layer on a semiconductor wafer such that the insulation layer and the semiconductor form an insulation-semiconductor interface;

depositing a first etching material on the surface of the insulation layer that is oppositely disposed from the insulation-semiconductor interface, said first etching material being reactive with etching solutions with which said insulation layer is also reactive, said first etching material having a substantially higher etching rate in said etching solutions than said insulation layer;

depositing a second etching material on said first etching material, said second etching material being substantially inert with etching solutions with which said insulation layer and said first etching material are reactive;

forming a bilayer structure on said insulation layer, said bilayer structure including portions of said first and second layers of etching material with channels provided in selected portions of said first and second layers;

depositing a third layer of etching material over said bilayer structure and over said insulation layer within the channels of said bilayer structure, said third layer of etching material being reactive with etching solutions with which said first etching material and said insulation layer are reactive, said third etching material having a substantially higher etching rate in said etching solutions than said insulation layer;

forming a channel in the third etching material, said channel being offset with respect to the channel in said bilayer structure such that a portion of said channel in the third

etching material coincides with a portion of the channel of said bilayer structure;

etching said first and third etching materials and said insulation layer until said first and third etching materials are etched away and areas of said insulation layer that were covered by said first etching material are etched to form sloped areas which are substantially in a plane that intersects the plane of the insulation-semiconductor interface; and

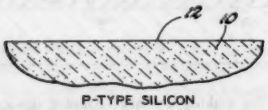
depositing electrodes on the sloped areas of the insulation layer surface so that the electrodes induce an electric field in said semiconductor wafer in response to clocking signals, said electric field having a substantial lateral component that aids the transfer of charge carriers through the semiconductor wafer.

4,364,165

LATE PROGRAMMING USING A SILICON NITRIDE INTERLAYER

John E. Dickman, Russiaville, and William B. Donley, Kokomo, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 28, 1981, Ser. No. 268,088
Int. Cl.³ H01L *21/22*
U.S. Cl. 29—571 **5 Claims**



1. A method of making a high speed, high density read-only memory and encoding it in later steps of the method comprising:

forming on a semiconductor surface, an operative IGFET array having an overlying polycrystalline silicon gate electrode pattern;

depositing a first blanket insulating layer onto said array;

forming on said first layer a mask covering array contact areas and channels of predetermined IGFETs desired to be operative to an intended gate electrode operating voltage, said contact areas having openings for etching contact windows;

etching said array to remove said first layer from all parts of said array not covered by said mask;

ion implanting said array, to significantly selectively alter threshold voltage of all IGFETs therein not covered by said mask, whereby only said predetermined IGFETs in said array are responsive to said intended gate voltages;

removing said mask and covering said array with a second blanket insulating layer that is preferentially etchable with respect to said first layer;

etching contact windows in the second layer without etching windows in it over any IGFET channels or unintentionally exposing gate electrode edges; and

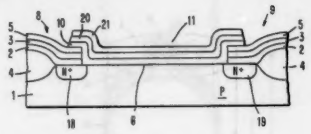
forming an array output conductor pattern on said second insulating layer, whereby said pattern may cross said gate electrodes over said channels and make contact with said array while maintaining minimal gate-output parasitic capacitance and electrical shorts.

4,364,166

SEMICONDUCTOR INTEGRATED CIRCUIT INTERCONNECTIONS

Billy L. Crowder, Putnam Valley, and Arnold Reisman, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 16,647, Mar. 1, 1979, Pat. No. 4,329,706.
This application Sep. 2, 1981, Ser. No. 298,551
Int. Cl.³ H01L *21/225*
U.S. Cl. 29—571 **4 Claims**



1. In the process of making a semiconductor device wherein a conductor makes contact with a precisely positioned region of a first conductivity type in a substrate of a second conductivity type opposite to said first conductivity type the alignment improving steps of:

positioning in contact with said semiconductor substrate in a precise location a conductor comprising a first layer of polysilicon contiguous with a second layer of a metal silicide, said polysilicon layer containing a diffusable dopant operable on diffusion to convert said substrate to said first conductivity type; and

diffusing said dopant from said conductor into said substrate forming thereby a region of said first conductivity type in said substrate; and

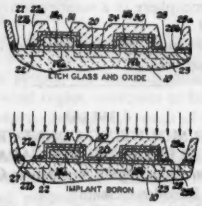
depositing at least one insulated electrode of a layer of polysilicon contiguous with a layer of a metal silicide overlapping said positioned conductor by the separate steps of sequentially depositing a layer of oxide, a layer of polysilicon and a layer of metal silicide.

4,364,167

PROGRAMMING AN IGFET READ-ONLY-MEMORY

William B. Donley, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 98,211, Nov. 28, 1979, Pat. No. 4,295,209.
This application Apr. 8, 1981, Ser. No. 252,203
Int. Cl.³ B01J *17/00*; G11C *11/40, 17/00*; H01L *21/263*
U.S. Cl. 29—576 B **3 Claims**



1. A method of making a read-only-memory comprising the steps of:

forming an array of IGFETs on a semiconductor surface, each of said IGFETs having an operable channel region underlying a gate dielectric and electrode that is penetrable by an ion beam;

depositing a blanket layer of a first dielectric material onto said array, which layer is permeable by an ion beam;

depositing a blanket layer of a second dielectric material onto the first dielectric layer, which second layer is not significantly penetrable by said ion beam and can be preferentially etched;

etching windows in said second dielectric layer over chan-

nel regions of selected IGFETs in said array with an etchant that does not also attack the first dielectric layer, and thus does not uncover said gate electrodes;

exposing said windows and second dielectric layer to said ion beam in a dose effective to make said selected IGFETs unaffected by gate operating voltage, and thereby encode said array; and

electrically contacting all of said IGFETs, even those made inoperative, whereby the first dielectric layer uncovered in said windows provides electrical insulation between at least one drain electrode and a gate electrode.

4,364,168

METHOD OF FABRICATING LIQUID CRYSTAL DISPLAY CELL

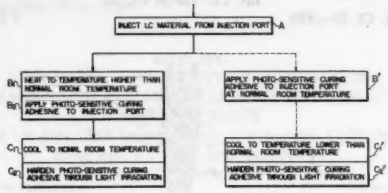
Shigeru Matsuyama, and Ken Sasaki, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 22, 1980, Ser. No. 189,715

Claims priority, application Japan, Nov. 26, 1979, 54-152076

Int. Cl.³ G02F *1/13*

U.S. Cl. 29—592 R **10 Claims**


INJECT LC MATERIAL FROM INJECTION PORT
A
HEAT TO TEMPERATURE HIGHER THAN NORMAL ROOM TEMPERATURE
APPLY PHOTO-SENSITIVE CURING ADHESIVE TO INJECTION PORT
COOL TO NORMAL ROOM TEMPERATURE
HARDEN PHOTO-SENSITIVE CURING ADHESIVE THROUGH LIGHT IRRADIATION
APPLY PHOTO-SENSITIVE CURING ADHESIVE TO INJECTION PORT AT NORMAL ROOM TEMPERATURE
COOL TO TEMPERATURE LOWER THAN NORMAL ROOM TEMPERATURE
HARDEN PHOTO-SENSITIVE CURING ADHESIVE THROUGH LIGHT IRRADIATION

1. A method of fabricating a liquid crystal display cell, comprising the sequential steps of:

adhering opposite and spaced substrates to each other at their peripheral portions through a sealing material while providing an envelope for receiving a liquid crystal material and a liquid crystal material injection port at a localized part of the peripheral portion sealed by said sealing material;

injecting a liquid crystal material into said envelope from said injection port;

applying a photo-sensitive curing adhesive to said injection port at a first preselected temperature; and

hardening said photo-sensitive curing adhesive at a second preselected temperature lower than said first preselected temperature to hermetically seal said injection port, thereby completing a liquid crystal display cell.

4,364,169

METHOD OF PRODUCING A STATOR IRON CORE

Kenzi Kawano, Okazaki; Koichi Fukaya, Aichi, and Keizou Jyoko, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 2, 1981, Ser. No. 250,149

Claims priority, application Japan, Oct. 24, 1980, 55-149814

Int. Cl.³ H02K *15/02*

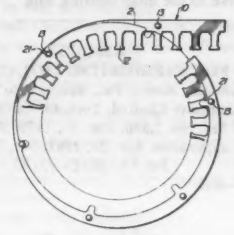
U.S. Cl. 29—596 **3 Claims**

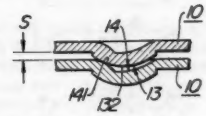
1. A method of production of an iron core for a rotary electric machine comprising the steps of:

forming an iron core blank of the comb shape having a plurality of teeth spaced apart from one another a predetermined distance and extending widthwise at one side of the iron core blank, said iron core blank being formed by blanking from steel strip in such a manner that two iron core blanks can be formed in one operation with the teeth of the two blanks being in staggered relationship;

forming a plurality of projections on said iron core blank, said projections each having a straight portion and being located on one surface of the iron core blank with said straight portion being perpendicular to said one surface, so that when said blank is spirally wound the projections are disposed equidistantly from one another circumferentially on each of the convolutions of the spirally wound iron core blank, while a plurality of recesses are formed on the other surface of said blank in positions corresponding to the projections on said one surface, said recesses each having a plurality of bulges in positions symmetrical in rotation with respect to the center of the recess;

winding said iron core blank with said projections and recesses into a spiral form by applying a winding force on said





straight portion of each of said projections while subjecting the blank to plastic deformation, and superposing convolutions of the spirally wound blank one above another by inserting the projections in the recesses of the adjacent convolution while forming a clearance between the adjacent convolutions of the spirally wound iron core blank; and

joining the convolutions of the spirally wound iron core blank together by electric resistance welding at the joints of said projections and said recesses of the adjacent convolutions.

4,364,170

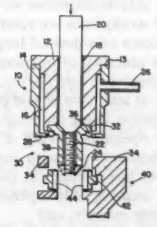
BALL BEARING ASSEMBLY DEVICE

Joseph M. Ratliffe, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 13, 1981, Ser. No. 224,775

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—724 **18 Claims**



1. A device for assembling an inner bearing ring into an outer bearing ring, comprising:

means holding the inner bearing ring for assembly into the outer bearing ring;

means attaching the inner bearing ring to said holding means including a threaded portion on said holding means adapted to extend through the inner bearing ring and a fastener associated with said threaded portion for securing the inner bearing ring to said holding means;

means positioning a plurality of ball bearings relative to the inner bearing ring;

means aligning the inner bearing ring with the outer bearing ring for insertion thereinto; and

vacuum means affixing temporarily the plurality of ball bearings relative to the inner bearing ring.

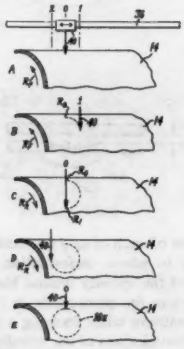
4,364,171

METHOD FOR FABRICATING ISOLATED PHASE BUS

Roy A. Niemann, Aston, Pa., assignor to Canadian General Electric Company Limited, Toronto, Canada

Division of Ser. No. 7,546, Jan. 30, 1979, Pat. No. 4,288,681. This application Apr. 20, 1981, Ser. No. 255,955

Int. Cl.³ H01B *13/20*

U.S. Cl. 29—828 **8 Claims**

1. In a method of fabricating an isolated phase bus system, the isolated phase bus system including a cylindrical bus conductor and a mating enclosure therefor, the mating enclosure having a larger diameter than the cylindrical conductor, comprising the steps of:

(a) fabricating said cylindrical bus conductor, including the steps of:

(1) providing a first plurality of cylindrical workpieces of a first diameter,

(2) disposing said first plurality of workpieces in a fixture and aligning said cylindrical workpieces such that the longitudinal axes thereof are substantially coincident,

(3) rotating said workpieces together in said fixture about said longitudinal axes,

(4) welding said workpieces to one another end-to-end while said workpieces are rotating to form a cylindrical bus conductor of a desired length,

(5) cutting a plurality of openings in said bus conductor while it remains in said fixture, for receiving mounting hardware, at least two of said openings being located in spaced relation along the length of said bus conductor, said two openings having a predetermined angular relation therebetween with respect to the longitudinal axis of said bus conductor, the cutting step including precisely locating said openings in a predetermined reproducible manner, and

(b) fabricating said mating enclosure, including the steps of:

(1) providing a second plurality of cylindrical workpieces, said second plurality of cylindrical workpieces having a larger diameter than said first plurality of workpieces,

(2) disposing said second plurality of workpieces in a fixture and aligning said second plurality of cylindrical workpieces such that the longitudinal axes thereof are substantially coincident,

(3) rotating said second plurality of workpieces together in said fixture about said longitudinal axes,

(4) welding said second plurality of workpieces to one another end-to-end while said workpieces are rotating to form an enclosure of a desired length,

(5) cutting a plurality of openings in said enclosure while it remains in said fixture, the cutting step being performed substantially as in step (a) 5, said openings in said enclosure including openings which are precisely located in said predetermined reproducible manner so that said enclosure openings are substantially longitudinally and angularly aligned with said bus conductor openings formed in step (a) 5.

4,364,172

METHOD OF FORMING AN ELECTRICAL CONNECTOR

Steven M. Kelly, 600 West at 900 North, Ligonier, Ind. 46767

Filed Jun. 26, 1980, Ser. No. 163,174

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—858 **7 Claims**

1. The method of forming an electrical connector at one end of a conductor disposed in a flexible metal conduit comprising the steps of:

providing the conductor with a terminal at the one end;

placing at least a portion of the terminal, a portion of the conductor, and a portion of the flexible metal conduit in a connector forming cavity so that the conduit and terminal extend in opposite directions from opposed sides of the cavity; and

forming an insulating material about the terminal, conductor, and flexible metal conduit portions in the cavity to conform the insulating material to the exterior of the flexible metal conduit portion in the cavity with insulating material flowing into the interior of the flexible metal conduit and beyond the cavity.

4,364,173

METHOD OF MAKING AN ELECTRICAL CONTACT

Richard C. Broadhurst, Harrow, England, assignor to Johnson, Matthey & Co., Limited, London, England

Continuation of Ser. No. 39,746, May 16, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 201,027

Claims priority, application United Kingdom, May 17, 1978, 20132/78

Int. Cl.³ B23P *11/02, 19/02;* **B21D** *39/00;* **H01R** *43/04*

U.S. Cl. 29—882 **10 Claims**

1. A method of making an electrical contact comprising a base and a contact element having a contact surface made from a material comprising a noble metal, the method comprising:

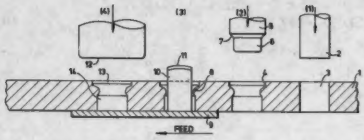
(a) forming a hole in said base, said hole having a shape and size less than that required to accept the contact surface of the contact element;

(b) enlarging at least an entrance of the said hole, to an extent to accept the contact surface area of the element, by compression deformation, transversely of the base, of material

around the entrance to the hole so as to cause the compression deformed material to form a protrusion extending inwardly from the wall of the hole and at a position displaced from the entrance of the hole;

(c) placing the said base on a rigid underlying support;

(d) inserting into the hole having the previously formed



protrusion therein, a contact element billet made from a metal and having a contact surface comprising a noble metal; and

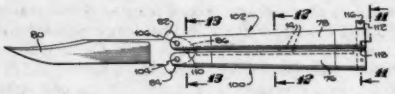
(e) deforming the so-inserted billet to substantially fill the hole and encompass the protrusion to retain the billet in the hole and produce a contact surface with respect to the surface of the base.

4,364,174

APPARATUS AND IMPROVED METHOD OF MANUFACTURING HANDLES FOR BUTTERFLY DEFENSE KNIFE

Lester De Asis, 3040 Ingledale Ter., Los Angeles, Calif. 90039

Filed Apr. 27, 1981, Ser. No. 257,911
Int. Cl.³ B26B *3/06*
U.S. Cl. 30—153 **27 Claims**



3. A handle section for use as part of the two section handle of a butterfly knife wherein each section comprises:

a. a longitudinal upper face;

b. a longitudinal lower face;

c. a first end face;

d. a second end face;

e. a first lateral face;

f. a second lateral face;

g. a central longitudinal slot in said longitudinal lower face extending along the entire length of said longitudinal lower face and extending transversely through most of the depth of said section;

h. a first transverse slot in the central portion of said first end face wherein the first transverse slot extends inwardly to a selected longitudinal distance along said longitudinal upper face and coincides with said central longitudinal slot;

i. a second transverse slot in the central portion of said second end face wherein the second transverse slot extends inwardly to a selected longitudinal distance along said longitudinal upper face and coincides with said central longitudinal slot;

j. said first lateral face containing a first lateral recess therein, wherein the recess extends transversely through the entire height of the first lateral face and extends longitudinally along the central portion of the first lateral face, beginning at a first recess edge and terminating in a second recess edge;

k. said first recess edge in said first lateral face being dovetailed;

l. said second recess edge in said first lateral face being dovetailed;

m. said second lateral face containing a second lateral recess therein, wherein the recess extends transversely through the entire height of the second lateral face and extends longitudinally along the central portion of the first lateral face, beginning at a first recess edge and terminating in a second recess edge;

n. said first recess edge in said second lateral face being dovetailed;

o. said second recess edge in said second lateral face being dovetailed.

p. said longitudinal lower face being tapered from said second end face to said first end face;

q. said first and said second lateral faces adjacent said second end face being rounded such that the surfaces of said first and second lateral faces form part of the circumference of a circle which has its central point located at the center of said second end face;

r. said first and said second lateral faces adjacent said first end face being rounded such that the surfaces of said first and second lateral faces form part of the circumference of a circle which has its central point located at the center of said second end face;

s. said first end face being rounded;

t. said upper face containing a depression along each edge of said first transverse slot;

u. said first and said second lateral faces containing a central hole through their entire thickness adjacent said second end face;

v. said first and said second lateral faces containing a central hole through their entire thickness near said first end face;

w. said first lateral recess containing a multiplicity of partial holes, wherein said holes are aligned along the entire length of said first lateral recess and do not penetrate the lateral wall of said recess so as not to come in contact with said central longitudinal slot;

x. said second lateral recess containing a multiplicity of partial holes, wherein said holes are aligned along the entire length of said second lateral recess and do not penetrate the lateral wall of said recess so as not to come in contact with said central longitudinal slot;

y. said first lateral recess containing gripping means therein;

z. said second lateral recess containing gripping means therein; and

aa. said gripping means having associated therewith adhesive material which rigidly attaches said gripping means into said first and said second lateral recesses, wherein said adhesive material is placed into each of said multiplicity of partial holes and along the interior surface of said gripping means;

bb. whereby two such sections become handle sections of a knife and are attached through said holes in their lateral faces near said first end to the tang of a knife blade to form the light weight handle of the knife such that the knife blade is completely concealed within said central longitudinal slot of each handle section when the knife is in a closed position and form the handle of the knife by having their upper faces adjacent each other when the knife is in an opened position.

4,364,175

GRADE LINER

Richard N. Levake, 814 Ash St., Spooner, Wis. 54801, and Archibald E. Ferguson, 330 E. Concorda Dr., Tempe, Ariz. 85282

Filed Jul. 22, 1980, Ser. No. 171,249
Int. Cl.³ G01B *11/00*
U.S. Cl. 33—1 H **11 Claims**

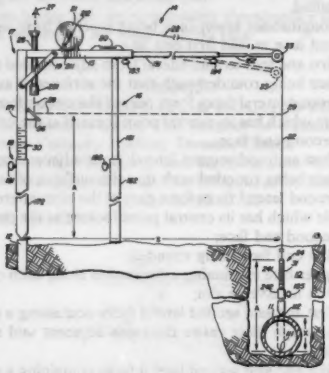
1. A grade liner for use in cooperating with grade stakes in determining grade with a ditch comprising:

means for establishing the horizontal sight line a selected rise distance "A" above a grade stake;

plumb means coupled to said means for establishing a horizontal sight line and intersecting said horizontal sight line comprising a linear scale the intersection of which with

said horizontal sight line is viewable along said sight line the zero calibration of which scale is located a selected distance related to said rise distance "A" from the lower end of said plumb means;

offset means coupled to and above said means for establishing a horizontal sight line for supporting said plumb means a selected offset distance from said grade stake; and



means coupled to said offset means for locating the horizontal sight line established by said means therefore below said offset means so that the intersection of said linear scale with said horizontal line of sight will be uneffected by any sag in said offset means when the scale of reading of said linear scale is taken with respect to the lower end of said plumb means.

4,364,176

DRAWING APPLIANCE

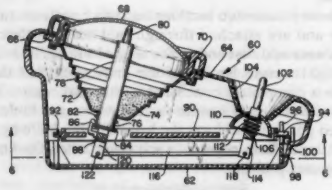
Andre J. Cassagnes, Vitry sur Seine, France, and Irving C. Dudley, Milford, Mass., assignors to Hasbro Industries, Inc., Pawtucket, R.I., a part interest

Filed Feb. 10, 1981, Ser. No. 233,201

Claims priority, application France, Feb. 14, 1980, 80 03306

Int. Cl.³ B43L *13/00*

U.S. Cl. 33—18 R **2 Claims**



1. In a drawing appliance comprising a housing in which a sealed enclosure is located, the outermost portion of said enclosure being defined by a translucent screen, a powdery material located in said enclosure and having adhering characteristics for adherence to said screen when placed into contact therewith, a movable stylus located in said enclosure, a control member, a linkage system interconnecting said control member to said stylus for moving said stylus across said screen to remove the powdery material therefrom and to thereby trace a line thereon, characterized in that said control member is depressible, one end of said linkage system is pivotally mounted on said housing, the other end of said linkage system is connected to said control member and is depressible therewith to pivot said linkage system and thereby remove said stylus from engagement with said screen.

4,364,177

COMPARATOR FOR VERIFYING LINEAR DIMENSIONS OF MECHANICAL PARTS

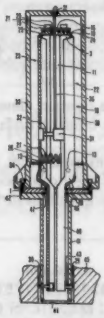
Mario Possati; Guido Golinelli, both of Bologna, and Narciso Selleri, Monteveglio, all of Italy, assignors to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed May 22, 1981, Ser. No. 266,331

Claims priority, application Italy, Jun. 2, 1980, 3433 A/80

Int. Cl.³ G01B *7/12*

U.S. Cl. 33—147 K **10 Claims**



1. A comparator for the checking of linear dimensions of mechanical parts comprising: a first support element defining a perforated plate; a second support element comprising essentially a rigid first member fastened to said perforated plate and located on one side of the plate; a second member fastened to said first member, said second member defining a first rigid portion, second and third rigid portions which define measurement arms and two elastically yieldable sections arranged between the first rigid portion and the second and third rigid portions, for permitting measurement displacements of the arms; two feelers fastened to the measurement arms, respectively, so as to come into contact with the part to be checked, said arms passing through a hole in said plate and bearing said feelers at ends located, with respect to the plate, on a side opposite that on which said rigid first member is located; and means adapted to detect the mutual position of the measurement arms.

4,364,178

NUMERICALLY CONTROLLED MEASURING DEVICE

Alain Huet, Buc, France, assignor to Societe d'Etudes Industrielles de Villejuif, Seiv Automation, Ris-Orangis par Evry, France

Filed Jun. 13, 1980, Ser. No. 159,077

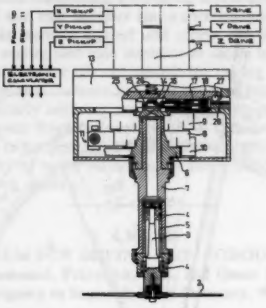
Claims priority, application France, Jun. 13, 1979, 79 15194

Int. Cl.³ G01B *7/02*

U.S. Cl. 33—174 L **11 Claims**

1. A numerically controlled coordinate measuring machine, comprising, part-support means for supporting a part to be measured, a probe, a plate supporting said probe, a head supporting said plate, means supporting said head and said part-support means for relative movement along three coordinate axes, drive means for providing relative movement between the part-support means and the head, said probe having an idler roller for contacting a part being measured, said probe being rotatable about a roller axis which is aligned with one of the coordinate axes, said probe being supported for movement relative to said plate in two mutually perpendicular directions which are perpendicular to the roller axis and correspond to two of said coordinate axes, elastic return means supported on the plate for biasing the roller axis toward a given position relative to the plate, two measuring pick-ups for sensing the distance measured along said two directions between the roller axis and said given position, electronic calculator means for

receiving signals from the measuring pick-ups and the coordinates which indicate the location of the head relative to the part-support means and for calculating coordinate locations of points of contact between the roller and the part being measured, said plate being biased against said head by an axial spring and supported on the head by three balls positioned in three radial grooves, means for detecting any separatory movement between the plate and the head to stop the machine when said separatory movement occurs.



4,364,179

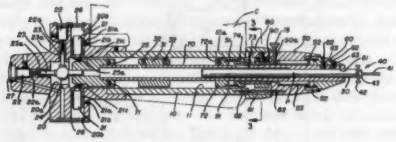
STATICALLY BALANCED INSPECTION PROBE ASSEMBLY

Frederick S. Schiler, Stow, and Gary D. Young, Akron, both of Ohio, assignors to Portage Machine Company, Akron, Ohio

Filed Oct. 31, 1980, Ser. No. 202,756

Int. Cl.³ G01B 7/28

U.S. Cl. 33—174 L **15 Claims**



1. A probe assembly for measuring deviation in X, Y and Z axes, comprising:

(A) a housing;

(B) an elongate guide received within said housing;

(C) probe means carried by said guide and projecting from said housing;

(D) universal joint means interconnecting said probe means to said housing for permitting movement in the X and Y axes;

(E) means carried by said probe means for statically balancing said probe means in the X and Y axes;

(F) adjustable counterbalance means carried by said guide; and

(G) measurement means

(1) carried by said housing and

(2) in contact with said probe means for measuring movement thereof in the X, Y and Z axes.

4,364,180

INSTRUMENTATION FOR SENSING THE TEST VALUES AT TEST SAMPLES

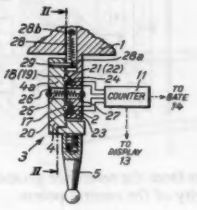
Jörg Willhelm, Nauborn; Hans-Dieter Jacoby, Werdorf; Erich Schuster, Hüttenberg, and Dieter Prinz, Biebertal, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Nov. 7, 1980, Ser. No. 204,842

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 2947394

Int. Cl.³ G01B 7/28

U.S. Cl. 33—174 L **4 Claims**



1. In an apparatus for sensing the test values at a test sample comprising a mechanical sensor moving relative to said test sample and consisting of a housing fixed part and of a movable articulating multi ball and socket part connected to said housing fixed part, and at least one test value transmitter connected to a counter, means for generating a trigger signal in said apparatus at the instant of impact between said sensor and said test sample connected to said counter and means for storing a record of a test value present at the time of impact at said test value transmitter connected after said counter, the improvement comprising:

at least one pickup (12,23,24,30) generating an electrical signal upon pressure mounted on said housing fixed part (2) of said sensor (5) delivering said trigger signal; and

said pickup prestressed by pressure applied between said fixed part and said articulating part at a predetermined constant pressure, the level of the resulting electrical signal remaining unchanged in the absence of the sensing process and changing upon sensing said test sample.

4,364,181

APPARATUS FOR CHECKING THE CAGE OF A CONSTANT VELOCITY JOINT

Gastone Albertazzi, Bologna, Italy, assignor to Finike Italiana Marposs, S.p.A., S. Marino di Bentivoglio (BO), Italy

Continuation-in-part of Ser. No. 74,653, Sep. 12, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 246,425

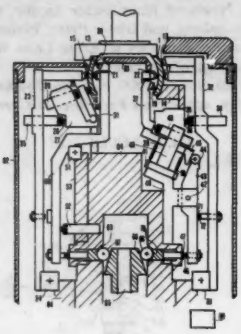
Claims priority, application Italy, Sep. 25, 1978, 3539 A/78

Int. Cl.³ G01B 7/00

U.S. Cl. 33—174 L **25 Claims**

15. Apparatus for checking the cage of a constant velocity joint, said joint having an outer wall with openings for housing the joint balls, comprising: first support means for supporting the cage; checking means; second support means, coupled to the first support means, for supporting the checking means; the checking means comprising checking elements cooperating with points of the periphery of the openings, the checking means providing signals indicative of the positions of these points with respect to the second support means; and processing means connected to the checking means, the processing means processing the signals provided by the checking means for providing signals substantially representative of the positions of the central points of the openings and for defining a reference geometric plane relative to the positions of the cen-

tral points, the processing means further providing measurement signals substantially representative of the distances of the



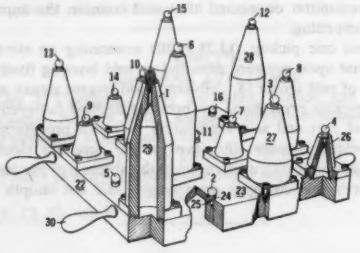
central points from the reference geometric plane for checking the coplanarity of the central points.

4,364,182

LATIN SQUARE THREE DIMENSIONAL GAGE MASTER

Lynn L. Jones, Lexena, Kans., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 12, 1981, Ser. No. 262,846
Int. Cl.³ G01B 7/03; G01C 25/00
U.S. Cl. 33—174 H **8 Claims**



1. A gage master for coordinate measuring machines comprising:

a. n^2 substantially identical object means for defining a point in space, where n is an integer ≥ 3;

b. mounting means for rigidly fastening each object means relative to the other object means to define n^2 points in space, the points being located relative to the coordinate X_0, Y_0, Z_0 at coordinates X_{iA}, Y_{jB}, Z_{kC} where A = unit of distance in the X direction, B = unit of distance in the Y direction, C = unit of distance in the Z direction, i = (0, 1, 2, . . . , n−1), j = (0, 1, 2, . . . , n−1), and for each column X_{iA} and each row Y_{jB}, k equals each number of the set (0, 1, 2, . . . , n−1), forming an n×n Latin square.

4,364,183

HELIOSTAT-ADJUSTING SOLAR SIGHT

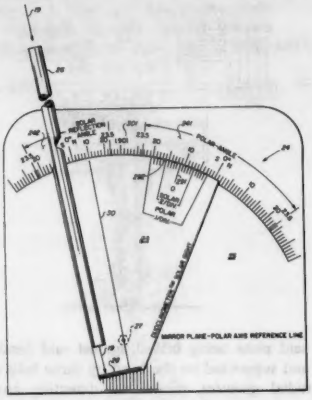
William A. Rhodes, 4421 N. 13th Pl., Phoenix, Ariz. 85014

Filed Jan. 21, 1980, Ser. No. 113,774
Int. Cl.³ G01C 1/00
U.S. Cl. 33—268 **9 Claims**

1. An optical device for determining when the device is aligned with a source of visible radiation comprising:

a hollow, empty, cylindrical tube having two open ends and a longitudinal axis, said tube having a substantially constant length to internal diameter, L/D ratio; and

a substantially opaque viewing surface mounted relative to one end of said tube so that said surface is substantially



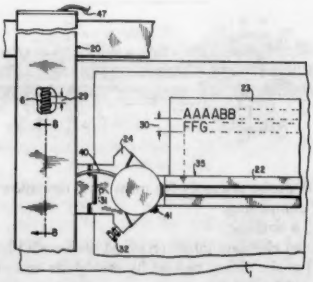
perpendicular to the longitudinal axis of the tube, the L/D ratio of the tube being such as to produce a distinct pattern on said viewing surface when the source of radiation substantially lies on the longitudinal axis of the tube.

4,364,184

INDICIA ALIGNMENT DEVICE

Martin E. Dowzall, Wyckoff, N.J., assignor to Letraset Corporation, Paramus, N.J.

Continuation-in-part of Ser. No. 948,225, Oct. 3, 1978, abandoned. This application Jun. 11, 1980, Ser. No. 158,445
Claims priority, application United Kingdom, Oct. 4, 1977, 41246/77; Japan, Oct. 3, 1978, 53-121255; Netherlands, Oct. 3, 1978, 7809995
Int. Cl.³ B43L 13/24
U.S. Cl. 33—447 **1 Claim**



1. Apparatus for use in applying dry transfer indicia in precise horizontal alignment to an indicia receiving surface comprising:

a baseboard on which said receiving surface is positioned,

a rule member positioned above said receiving surface and movable along a vertical axis substantially parallel to the plane of said receiving surface,

means for slidably mounting a dry transfer sheet containing a plurality of horizontally arranged rows of said dry transfer indicia printed thereon on the rule member to move back and forth longitudinally along said member,

means for the stepwise vertical movement of the rule for a preset fixed distance along said vertical axis into any of a plurality of spaced apart stops,

means for pivoting said rule member in a generally radial path in the plane of said baseboard and about a pivot pin fixed to a stationary base member to which said rule is connected comprising a threaded screw bearing against a face of said rule member and a spring in said base biasing said rule member against said screw, the rotation of said screw urging said rule member to move in a radial path about said pivot pin and against the urging of said spring,

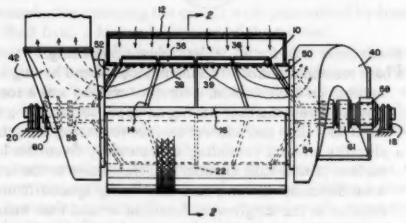
and the vertical distance between the base line of the indicia in vertically adjacent rows being an integral multiple of said preset fixed distance to allow transfer of individual indicia in horizontally aligned relationship from any of the plurality of rows of indicia on the transfer sheet to the receiving surface.

4,364,185

SYSTEM FOR DRYING WET, POROUS WEBS

Jules L. Dussourd, Princeton, N.J., and Oscar Luthi, Nashua, N.H., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Apr. 13, 1981, Ser. No. 253,192
Int. Cl.³ F26B *13/30*
U.S. Cl. 34—122 **6 Claims**



1. In a system for drying a wet, porous web with hot gases by flowing gas through the porous web: a stationary drum; a coaxial rotatable cylinder of larger diameter than the stationary drum mounted for rotational movement about the stationary drum, said rotatable cylinder having many large openings whereby a porous web on the external surface of the cylinder is dried by flowing gas through the web and the cylinder openings and into the cylinder; said stationary drum having a plurality of circumferentially-separated, longitudinally-extending gas baffles on its outside surface, said stationary drum also having a plurality of circumferentially-separated sets of inwardly-extending louvers attached to its inside surface, the gas baffles being positioned to direct gas in a radial direction inwardly through the louvers, the louvers being adapted to direct gas in an axial direction inside the drum; and first sealing members and circumferentially-separated second sealing members, each extending across the annular space between the stationary drum and the rotatable cylinder to divide said annular space into pressure zones of different pressure.

4,364,186

VENTILATED FOOTWEAR

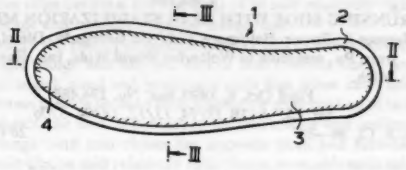
Sadao Fukuoka, Tokushima, Japan, assignor to Fukuoka Kagaku Kogyo Kabushiki Kaisha, Tokushima, Japan

Filed Jan. 29, 1981, Ser. No. 229,643
Claims priority, application Japan, Jun. 19, 1980, 55-84833[U]; Jun. 19, 1980, 55-84834[U]
Int. Cl.³ A43B *7/06, 13/20*
U.S. Cl. 36—3 B **7 Claims**

1. A ventilated article of footwear comprising an outer sole of deformable material having a concavity of appreciable depth formed in its upper surface and extending over substantially the entire area of said outer sole, said outer sole also having a upstanding peripheral portion of selected thickness entirely surrounding the body thereof,

an inner sole mounted above said outer sole and overlying said concavity to form an air chamber of appreciable depth between said soles, with said upstanding peripheral portion bordering and enclosing said air chamber, said inner sole having a plurality of ventilating apertures formed therein and providing communication between said air chamber and the interior of said article of footwear,

and supporting means of deformable material located within said air chamber in abutment with said inner sole and



outer sole and being adapted to compress in response to deformation of the outer sole when the weight of the wearer is applied to the latter,

whereby the upstanding peripheral portion of said deformable outer sole provides a force factor for upward deformation of said outer sole toward said inner sole under applied weight of the wearer, and for restitution of said outer sole to its non-deformed condition when the wearer's weight is released therefrom, the upward deformation of said outer sole reducing the depth of said air chamber sufficiently to compress the air therein, thereby discharging said compressed air through said ventilating apertures into the interior of said article of footwear.

4,364,187

SKATE SANDALS

Ricardo Melendez, P.O. Box 7000-287, Palos Verdes Peninsula, Calif. 90274

Filed Nov. 3, 1980, Ser. No. 203,645
Int. Cl.³ A43B *3/24;* A43C *13/00;* A43B *3/10*
U.S. Cl. 36—15 **10 Claims**

1. A device to be detachably connected to a roller skate having wheels to facilitate walking with the skate, said device comprising:

a bottom structure for contacting a floor surface as a person walks therealong with said device attached to a skate; and

resilient spring clip means carried by said bottom structure at the upper side thereof to which a skate is connectible by movement of the skate downwardly relative to said de-

vice, and from which the skate is detachable by movement upwardly relative to said device;

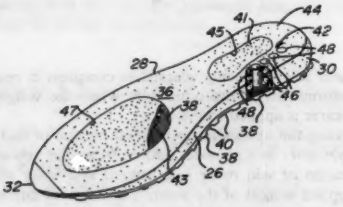
said clip means containing and forming at least one upwardly facing and upwardly opening recess into which at least one wheel of the skate is movable downwardly upon said downward attaching movement of a skate relative to said device, with said clip means having a resiliently deflectable portion near the upper end of said recess positioned to be displaced generally horizontally by a skate wheel upon downward movement thereof and after passage of the wheel to resiliently return inwardly to a position yieldingly retaining the wheel in said recess.

4,364,188

RUNNING SHOE WITH REAR STABILIZATION MEANS

Jerome A. Turner, Baltimore, Md., and George W. Dietel, Hanover, Pa., assignors to Wolverine World Wide, Inc., Rockford, Mich.

Filed Oct. 6, 1980, Ser. No. 194,485
Int. Cl.³ A43B *13/14, 13/12, 13/04, 5/06*
U.S. Cl. 36—31 **20 Claims**



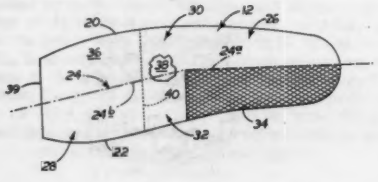
1. A sole component for an athletic shoe comprising a forefoot portion, an arch portion and a heel portion, said heel portion being formed of a first resilient material, and rear foot stabilization means, said stabilization means comprising a mass of a second resilient material located and confined adjacent the medial side of said heel portion, said first resilient material having a first durometer sufficiently low to provide good cushioning and impact absorption, said second resilient material having a second durometer higher than said first durometer to provide resistance to compression at the medial side of said heel portion, thereby lessening the tendency of the shoe to overpronation.

4,364,189

RUNNING SHOE WITH DIFFERENTIAL CUSHIONING

Barry T. Bates, 3809 Monroe St., Eugene, Oreg. 97405

Filed Dec. 5, 1980, Ser. No. 213,207
Int. Cl.³ A43B *13/16, 21/32, 5/00*
U.S. Cl. 36—31 **5 Claims**



1. Sole means in a sports shoe for absorbing shock on impact, and for producing lateral foot stability when the shoe is used for running, said means comprising

a heel section formed of a resilient material whose overall firmness on the inner side of a longitudinal heel midline axis is greater than that on the outer side of said midline axis, and

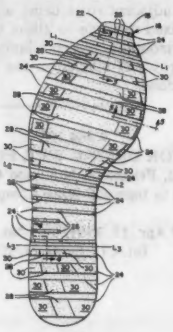
a forefoot section formed of a resilient material whose overall firmness on the outer side of a longitudinal forefoot midline axis is substantially the same as that on the outer side of said heel midline axis in said heel section.

4,364,190

OUTER SOLE FOR ATHLETIC SHOE

Ronald C. Yonkers, Hampton, N.H., assignor to BRS, Inc., Beaverton, Oreg.

Filed Aug. 14, 1980, Ser. No. 178,008
Int. Cl.³ A43B *13/04, 13/22, 5/00*
U.S. Cl. 36—32 R **35 Claims**



1. An outer sole for an athletic shoe comprising:

a base member formed of resilient material and having a heel section, an arch section, a forefoot section and a toe section, said base member having an upper surface for attachment to a shoe and a lower surface for facing the ground;

a plurality of bars extending downwardly from the lower surface of said base member and transverse to the lengthwise direction thereof, said bars being spaced from one another in the lengthwise direction of said base member, said bars having widths in the lengthwise direction of the outer sole which are varied in proportion to the load exerted at particular locations along the lengthwise direction of said outer sole during running, whereby said bars are wider at areas of greater load and are narrower at areas of less load; and

an intermediate bar extending downward from a plurality of said bars in each of said forefoot and heel sections, the length of said intermediate bars in the transverse direction of the outer sole varying in proportion to the load exerted at particular locations along the lengthwise direction of said outer sole during running, whereby said intermediate bars are longer at areas of greater load and are shorter at areas of less load.

4,364,191

PILING RAKE

Lyle C. Cazes, 81 Hamm Rd., R. R. 1, Abbotsford, British Columbia, Canada (V2S 1M3)

Filed Oct. 21, 1980, Ser. No. 199,336
Claims priority, application Canada, Sep. 29, 1980, 361482
Int. Cl.³ A01B *61/04;* **E02F** *3/76*
U.S. Cl. 37—2 R **1 Claim**

1. A rake for use with tractors, comprising:

a blade connectable to a tractor and having a top, a bottom and front and back sides which are substantially vertical when the blade is connected to the tractor;

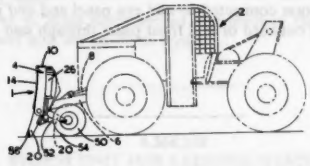
a plurality of teeth spaced-apart in a row and extending from the bottom of the blade, each said tooth having a lug selectively connected thereto in one of a plurality of positions along said each tooth;

a shaft and journal combination pivotally connecting each of the teeth to the blade and permitting independent pivotal

movement of said each tooth away from objects encountered by said each tooth when the tractor moves;

a plurality of fluid piston and cylinder combinations, each said combination having a cylinder pivotally connected to the back side of the blade near the top of the blade and a piston rod pivotally connected to the lug of one of the teeth so the pivotal movement of the teeth displaces pressurized fluid within the piston and cylinder combinations, the pressurized fluid reversing the pivotal movement when the teeth clear said objects

a fluid accummulator and fluid conduits connecting the piston and cylinder combinations to the accummulator in parallel, the accummulator receiving pressurized fluid displaced from the piston and cylinder combinations when the teeth are pivotally moved by the objects;



a coupler for charging the circuit with pressurized hydraulic fluid from a hydraulic system of the tractor;

means for controlling the rate of the reverse pivotal movement comprising a flow control valve along the fluid conduits between the accummulator and the piston and cylinder combinations to restrict a return flow of fluid from the accummulator to the piston and cylinder combinations when the teeth clear the objects;

the accummulator, the piston and cylinder combinations, the conduits and the flow control valve comprising a closed hydraulic system after being charged with pressurized hydraulic fluid; and a wheel rotatably mounted on the back side of the blade so the bottom of the wheel is generally even with the bottom ends of the teeth.

4,364,192

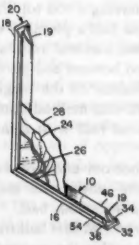
MINIMAL PARTS, QUICK PICTURE FRAME

Roland W. Lloyd, 4202 Phinney Ave. N., Seattle, Wash. 98103

Continuation of Ser. No. 60,783, Jul. 25, 1979, abandoned. This application Aug. 28, 1980, Ser. No. 182,008

Int. Cl.³ G09F *1/12*

U.S. Cl. 40—155 **1 Claim**



1. A frame adapted to frame an object which is at least generally planar, wherein said frame comprises a plurality of frame pieces, each frame piece being an elongated extrusion made from plastic which includes:

a. a side wall;

b. a relatively rigid flange having a base integrally formed with said side wall, wherein said relatively rigid flange extends outwardly at generally right angles with respect to said side wall and terminates in a free end which includes a pair of elongated parallel ribs; and

c. a flexible, resilient, gripping flange having a base integrally formed with said side wall, wherein the bases of said relatively rigid flange and said resilient gripping flange extends outwardly from said side wall for a substantial distance, and then reverses direction and extends back towards said side wall and terminates in a free end which is located generally opposite from the free end of said relatively rigid flange; and

wherein each said frame piece is adapted to be secured to a respective edge of said object by gripping its said respective edge between the free ends of its said relatively rigid flange and resilient gripping flange; and

wherein the pair of elongated parallel ribs of the relatively rigid flange and the free end of said resilient flange are arranged, sized and positioned such that when each said frame piece is secured to its respective edge portion of said object, the area of contact of the free end of said resilient flange with said object lies opposite from and between said ribs on said relatively rigid flange, to enable each said frame piece to better grip its respective edge portion of said object.

4,364,193

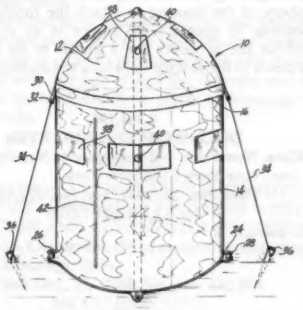
PORTABLE BLIND

John Visco, 334 Jeffer St., Ridgewood, N.J. 07450

Filed Dec. 31, 1979, Ser. No. 108,475

Int. Cl.³ A01M *31/02*

U.S. Cl. 43—1 **11 Claims**

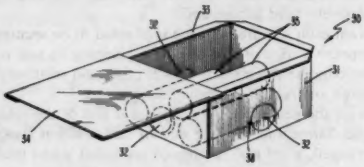


1. A portable hunting blind for concealing the presence of at least one hunter stalking game comprising an umbrella portion and a skirt portion, said umbrella having a support member and a collapsible member, said collapsible member being provided with first attachment means, said skirt portion having a first end located proximate to the ground and a second end located opposite said first end, said second end being provided with second attachment means for selectively attaching said skirt portion to said first attachment means on said collapsible member so as to form an enclosure wherein at least one of said skirt portion and said collapsible member further includes a plurality of transparent portions for allowing said at least one hunter inside said hunting blind to readily view the surrounding area for said game, at least one of said plurality of transparent portions being provided with at least one gun port for receiving a weapon for directing a volley of fire at said game.

4,364,194
ASSEMBLY FOR POISON BAITING RODENTS

Samuel K. Clark, Sr., Box 31A, Old Stage Rd., Glade Spring, Va. 23430

Continuation-in-part of Ser. No. 952,884, Oct. 18, 1978, abandoned. This application Jul. 24, 1980, Ser. No. 171,918
Int. Cl.³ A01M *25/00, 1/20*
U.S. Cl. 43—131 10 Claims



1. In an assembly for poison baiting rodents, said assembly including a housing and a plurality of elongated tubular elements having an inlet, and outlet and a bore size sufficient to allow rodents to enter and exit from the inside of the housing and the tubular elements having a sufficient length to prevent animals other than rodents from gaining access to the inside of the housing, the improvement comprising:

(a) the housing having an outer wall configuration including a plurality of flat planar sections with opening means in each said planar section,

(b) an elongated tubular element for each of the opening means in said housing,

(c) said housing defines an inner chamber sufficiently large to contain the total plurality of elongated tubular elements before said tubular elements are attached to said opening means,

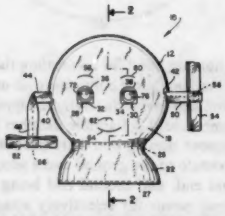
(d) each said tubular element including coupling means at one end thereof for fixedly connecting the tubular element to the opening means to extend outwardly from the opening means in the outer wall configuration,

(e) said opening means being spaced around the outer periphery of the housing to attach the tubular elements at locations to maintain the device in an upright position without the necessity for a means to fix the elongated elements to the surface on which the assembly is disposed.

4,364,195
DOLL WITH CLOSING EYES

Mary Kleve, New York, N.Y., assignor to Ned Strongin Associates, Inc., New York City, New York

Filed Jun. 25, 1981, Ser. No. 277,133
Int. Cl.³ A63H *11/00*
U.S. Cl. 46—135 R 8 Claims



1. A doll with closing eyes comprising a head portion including a base panel and a rear panel,

connection means interconnecting marginal edges of said base panel and said rear panel to form an envelope,

filler means disposed in said envelope and constituting a stuffing for said head portion,

a front panel overlying said base panel in flush abutment therewith, said front panel having a pair of spaced apart eye apertures simulating eye orbits,

an eye panel slidably disposed between said base panel and said front panel, said eye panel being formed with indicia depicting a spaced pair of closed eyes and a spaced pair of open eyes,

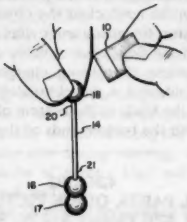
an actuation strip mounted on said eye panel and having end portions projecting from said doll head portion and being manually movable relative to said head portion to enable an operator to move said eye panel selectively between a first position in which said open eye indicia are in registry with said eye apertures, and a second position in which said closed eye indicia are in registry with said eye apertures, and

a pair of slots formed in said front panel with a slot disposed on either side of said pair of apertures, said actuation strip comprising a flexible ribbon member having an intermediate portion connected to said eye panel and end portions passing outward of said front panel through said slots.

4,364,196
METHOD OF OPERATING FERROUS TOY

Sheldon R. Shacket, 1446 W. Hutchinson St., Chicago, Ill. 60611

Filed Dec. 8, 1980, Ser. No. 214,274
Int. Cl.³ A63H *33/26;* G09B *23/18*
U.S. Cl. 46—242 3 Claims



1. The method of operating a magnetic toy, said toy comprising (i) a permanent magnet having magnetic north and south poles defining a magnetic axis therebetween, (ii) a non-magnetic ferrous rod, having a rod top end portion and a rod bottom end portion, and (iii) a plurality of non-magnetic ferrous balls, whereby said method results in said balls being suspended from said rod bottom end portion when said rod is removed from the influence of the magnetic field produced directly by said magnet, said method comprising the steps of:

touching a first ferrous ball with a magnetic pole of said magnet;

arranging said rod bottom end portion so that its axis is substantially coaxial with said magnetic axis and in contact with said first ferrous ball;

moving said ferrous rod and first ball from contact with said magnetic pole, but within the magnetic field of said magnetic pole, whereby said first ball is suspended from said rod above said magnet;

contacting said first ball with a second ferrous ball whereby said first and second balls are suspended from said rod bottom end portion above said magnet; and

removing said rod and suspended ferrous balls from the proximity of said magnet and out of the influence of the field produced directly by said magnet.

4,364,197

PRE-GROWN TURF AND MANUFACTURING OF PRE-GROWN TURF

Gerard Baron, Puteaux, France, assignor to Fitexa S.A., Courbevoie, France

Filed Mar. 2, 1981, Ser. No. 239,665
Claims priority, application France, Mar. 11, 1980, 80 05370
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—56 14 Claims

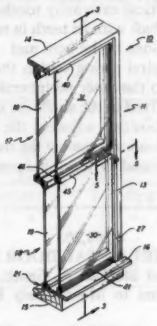
1. A carpet for providing pre-grown turf, comprising:
upper and lower layers of non-woven cloth, at least one of the non-woven cloth layers being substantially made of flax; and
a layer of grass seeds spread intermediate the upper and lower non-woven cloth layers.

4,364,198

STORM UNIT FOR EXISTING WINDOW

Thomas J. Netti, 3 Wallace Ave., Auburn, N.Y. 13021

Filed Jul. 11, 1980, Ser. No. 167,677
Int. Cl.³ E05B *65/04*
U.S. Cl. 49—62 16 Claims



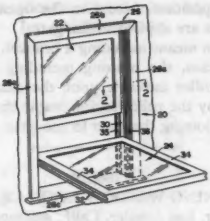
1. The method of assembling a storm unit in an existing window having at least one sash that is arranged to slide in a vertical direction within a frame, including the steps of
removing the existing inside stops from the frame,
installing vertical side rails in place of the stops against which the window slides,
providing a pair of parallel grooves in the opposed end faces of the rails with the grooves extending along the vertical length of each rail to provide an inner set of opposed grooves and an outer set of opposed grooves,
providing a pair of deformable flat transparent panels that are capable of being slidably mounted between the rails when seated in a flat posture within a set of said grooves, said panels having a total area which fills the window opening,
buckling an upper panel into one of said set of grooves,
buckling a lower panel into the other set of grooves,
securing upper and lower caps to the upper and lower edges of the two panels, and
weatherstripping between the lower cap of the upper panel and the upper cap of the lower panel to provide a seal when both panels are placed in a closed position filling the window opening.

4,364,199

REMOVABLE-TILT-OUT WINDOW CONSTRUCTION

William M. Johnson, and Kelly L. Calhoon, both of Sioux Falls, S. Dak., assignors to The Celotex Corporation, Tampa, Fla.

Filed Jul. 11, 1980, Ser. No. 167,580
Int. Cl.³ E05D *15/22*
U.S. Cl. 49—181 12 Claims



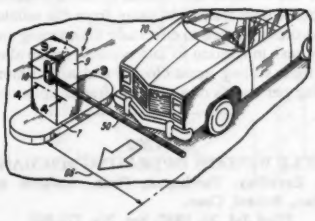
8. In a tilt-out sash window comprising a frame including side jambs, at least one sash having side stiles, weather stripping secured to each of said side jambs, said weather stripping being shaped to receive said window stiles in slidable engagement, a longitudinal channel in said weather stripping on each side of said sash window, said channel having a back wall, spaced sidewalls and a front wall, at least one track integral with and extending perpendicularly away from said backwall toward said front wall in spaced parallel relationship with one of said sidewalls and a balance spring locking mechanism comprising:
a slidable block in each of said longitudinal channels, said slidable block having at least one slot extending the length of one side of said slidable block through one face thereof
said slidable block being positioned within said channel so that said slot is astride said track,
said slidable block further having a central opening,
a locking cam rotatably mounted in said central opening of said slidable block,
spring means attached to said channel and said slidable block
said locking cam being moveable into and out of engagement with said track so as to press said track into locking engagement with one side of said slot whereby said slidable block can be held fixedly in place with respect to said weather strip.

4,364,200

AUTOMATICALLY OPERABLE AUTOMOTIVE VEHICLE GATE APPARATUS PROVIDED WITH SELF PROTECTION AND AUTOMOTIVE PROTECTION

Carl W. E. Cobb, Centerville, Ohio, assignor to Kettering Medical Center, Kettering, Ohio

Filed Dec. 29, 1980, Ser. No. 220,358
Int. Cl.³ E05D *15/52*
U.S. Cl. 49—192 8 Claims



1. Automotive vehicle gate apparatus comprising:
rotary support means,

a gate having a closed position and an open position,

connection means joining the gate to the rotary support means for angular movement of the gate between closed position and open position with rotative movement of the rotary support means, said connection means including means for angular movement of the gate about a plurality of axes with respect to the rotary support means and including means for angular movement of the gate from the closed position thereof to the open position thereof when forces are applied to the gate,

the connection means including a bracket, a housing joined to the bracket, the housing including an inclined cam surface, a roller movable upon the cam surface, a stem supported by the roller and movable therewith, and pivotal means joining the stem to the gate.

4,364,201

FULL-OPENING WINDOW LINKAGE ASSEMBLY

George A. Taylor, Los Angeles, Calif., assignor to A. W. Anderberg Manufacturing Co., Los Angeles, Calif.

Filed Sep. 15, 1980, Ser. No. 186,839

Int. Cl.³ E05D *15/40*

U.S. Cl. 49—248 **9 Claims**

1. An improved linkage supporting and positioning a window sash in relation to a window frame, comprising:

a window frame track member which is affixed to said window frame;

a moveable sash support member upon which the window sash is attached;

an upper linkage means having one end pivotally connected to said frame track member and the other end pivotally connected to said sash support member;

a slide, slidably connected to said frame track member;

a lower linkage means having one end pivotally connected to said slide and the other end pivotally connected to said sash support member at a joint removed from the connection of said support member with the upper linkage means;

a stabilizing linkage pivotally connected on one end to the frame track member and on the other end to the lower linkage means; and

whereby the window sash affixed to said moveable support member is both translated away from the window frame and pivotally rotated to effectuate the opening and closing of said sash in relation to said window frame allowing for both tight sealing upon closing and a maximum escape opening per length of a window frame, upon opening.

4,364,202

VEHICLE WINDOW OPERATING MECHANISM

Robert J. Zavatkay, Torrington, Conn., assignor to Barnes Group Inc., Bristol, Conn.

Filed Jul. 30, 1980, Ser. No. 173,863

Int. Cl.³ E05F *11/48*

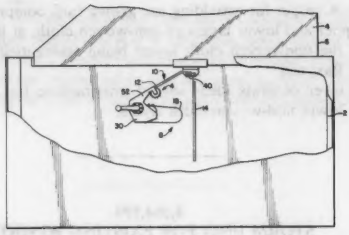
U.S. Cl. 49—352 **1 Claim**

1. For use with an automobile door having a window opening and a window slidably mounted in the opening, a mechanism for raising and lowering the window comprising:

(a). a rigid track fixed to the door below the window opening and having a slot opening along its length,

(b). a flexible non-metallic belt slidably mounted in the track and having a portion thereof connected to the lower part of the window, and having equally spaced perforations formed along its length which are accessible through the slot opening in the track,

(c). operating means for the window comprising an externally toothed gear rotatably mounted on the door with its teeth meshing with the perforations in the belt, and a



handle connected to the gear for operating the gear to move the belt along the track,

(d). a fixed shaft mounted on the door adjacent the track,

(e). a hollow cylindrical externally toothed casing rotatably mounted on the shaft with its teeth in meshed engagement with the perforations in the belt, and

(f). a backwound spiral spring within the casing having its outer end fixed to the inner peripheral wall of the casing and its inner end fixed to the shaft, the spring being moved from its normal position adjacent the peripheral wall of the casing to its position adjacent the shaft on lowering the window and unwound to its normal position on raising the window.

4,364,203

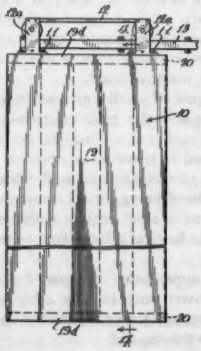
MODULAR SHEET METAL DOOR STRUCTURE

Reuel A. Seaholm, and Stephen W. Smith, both of Arkansas City, Kans., assignors to Montgomery Elevator Company, Moline, Ill.

Filed Nov. 6, 1980, Ser. No. 207,063

Int. Cl.³ E05D *13/02*

U.S. Cl. 49—409 **26 Claims**



1. A modular sheet metal door structure for use in a location where only one surface and the upright door sides must present

a finished appearance, said structure comprising, in combination:

a plurality of upright sheet metal modules of the same length, each said module having a main web that forms a part of the unfinished surface of the door, and side webs perpendicular to said main web, and said modules having their main webs coplanar and their side webs abutting;

a one-piece sheet metal sheath having a body which forms the entire finished surface of said door, said sheath having upright marginal portions which closely embrace the modules to provide the finished upright door sides, and the body of said sheath abutting the edges of at least some of the module side webs;

means fixedly connecting said modules to one another and to said sheath;

and header means fixedly secured to the upper and lower ends of said modules to provide the ends of the door.

4,364,204

APPARATUS FOR MACHINING A NUMBER OF WORKPIECES WITH ONE TOOL

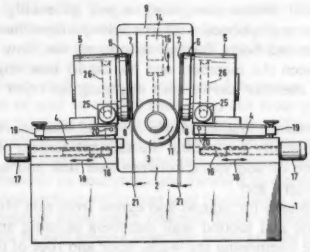
Franz F. Peiseler, Ronsdorfer Strasse 177, 5630 Remscheid, Fed. Rep. of Germany

Filed Mar. 27, 1980, Ser. No. 134,436

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 2912721

Int. Cl.³ B23F *1/02, 1/06*

U.S. Cl. 51—52 R **3 Claims**



1. In apparatus for machining face-type serrations in the planar end faces of a plurality of ring-shaped workpieces, comprising a single tool and power means for driving said tool wherein the improvement comprises that said tool is a grinding wheel having an axis of rotation, a plurality of workpiece holders, each of said holders arranged to hold at least a separate workpiece, means movably mounting said holders for moving said holders at the same time so that each of the workpieces can be moved at the same time in the direction toward and transversely of the axis of rotation of said grinding wheel whereby each of the workpieces moves into engagement with said grinding wheel, said holders are disposed in positions spaced apart around said grinding wheel, said means movably mounting said holders is operable to move said holders stepwise each in a separate plane parallel to the axis of rotation of said grinding wheel, means for mounting said grinding wheel for a feed movement and for moving said grinding wheel through said feed movement with the feed movement being a movement in addition to the machining movement of said grinding tool, said grinding wheel is circular and is rotationally driven for the machining movement, and means supporting said holders for adjusting the grinding angle between the planar end faces of the ring-shaped workpieces to be machined and said grinding wheel.

4,364,205

PORTABLE STRUCTURE AND METHOD OF ERECTING SAME

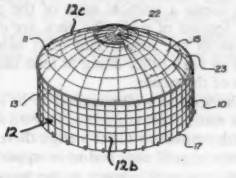
William A. Scott, Winnipeg, Canada, assignor to Don Fell Limited; Gordon Fell Limited and Lawrence Fell Limited, all of Ontario, Canada

Continuation-in-part of Ser. No. 45,975, Jun. 6, 1979, abandoned. This application Dec. 24, 1980, Ser. No. 220,138

Claims priority, application Canada, Jun. 16, 1978, 305673

Int. Cl.³ E04D *1/34*

U.S. Cl. 52—4 **18 Claims**



1. Apparatus for assembling into a structure suitable for storage of material such as grain, comprising a wire mesh strip adapted to form an outer circular support wall, a shaped, single piece flexible plastic liner having a circular floor extending at its periphery into a cylindrical wall with an open top, said cylindrical wall being adapted to provide an inner wall contacting and circumscribed by said outer support wall upon assembly of said structure, said cylindrical wall being further adapted to provide a roof portion upon assembly of said structure, means for bringing together the open top of the cylindrical wall to close the structure after assembly and loading to provide a weather-proof enclosure and a flexible generally conically shaped plastic cover adapted to fit over the roof portion, the outer surface of said cover having a silver coating to render it reflective to sunlight.

4,364,206

PREFABRICATED BUILDING UNITS FOR CONSTRUCTING BUILDING, AND BUILDINGS WHOSE FABRIC COMPRISES ASSEMBLED UNITS OF THIS KIND

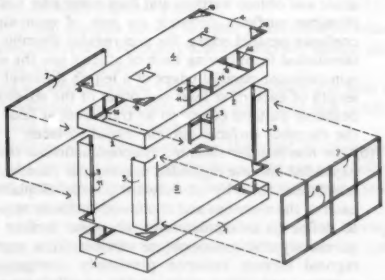
Jacques Wybauw, 41 Avenue Brunard, 1180 - Bruxelles, Belgium

Filed Dec. 5, 1979, Ser. No. 100,374

Claims priority, application France, Dec. 11, 1978, 78 34744; May 2, 1979, 79 11027; Jun. 12, 1979, 79 14983

Int. Cl.³ E04B *1/348*

U.S. Cl. 52—79.7 **18 Claims**



15. A building composed of a plurality of superposed and juxtaposed building units bolted together, each such unit com-

prising a metallic structure having the shape of a right prism, said structure further comprising:

a lower frame formed of wide, flat bars disposed along the side faces of the prism in such a manner that the bottom edge of such frame forms the sides of the bottom base of the prism;

an upper frame formed of wide, flat bars disposed along the side faces of the prism in such a manner that top edge of such upper frame forms the sides of the top base of the prism; and

uprights having a V-shaped section joining together said frames, each upright being disposed in such a manner that its edge forms a vertical edge of the prism and that its flanges, formed of wide, flat bars, are disposed along the side faces of the prism, said units being adapted to be fastened to each other along at least one pair of adjacent surfaces of the prism;

a bottom horizontal wall attached to its lower frame comprising a metal sheet connected thereto at a predetermined level with respect to the top edge thereof; and,

a top horizontal wall attached to its upper frame at a predetermined level with respect to the top edge thereof, said horizontal walls being self-supporting, whereby each forms, together with its frame, an empty box open at the bottom.

4,364,207

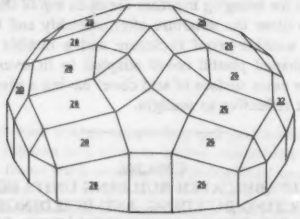
EXTENDED SPACE ENCLOSING STRUCTURE

Helmut Bergman, 116 Newport Ave., Scarborough, Ontario, Canada (M1L 1J5)

Continuation-in-part of Ser. No. 64,756, Aug. 8, 1979, Pat. No. 4,258,513. This application Nov. 12, 1980, Ser. No. 206,071

Int. Cl.³ E04B *1/32*

U.S. Cl. 52—81 **3 Claims**



1. A space enclosing structure, having an outer edge, comprising a dome-like portion of an expanded non-regular rhombic triacontahedronal form,

(a) the non-regular rhombic triacontahedronal form, which is expanded, comprising a deregularized regular rhombic triacontahedronal form of rhombus surfaces, each having acute and obtuse vertices and four outer edges of the said rhombus surfaces defining six sets of equivalent non-coplanar parallel edges, the non-regular rhombic triacontahedronal form having each of at least one the six sets of non-coplanar parallel edges of a length different than the length of each of at least one other of the six sets of non-coplanar parallel edges, to so transform at least some of the rhombus surfaces into rhomboid surfaces;

(b) the non-regular rhombic triacontahedronal form being expanded into the expanded non-regular rhombic triacontahedronal form by an outward parallel displacement of each of the rhombus and rhomboid surfaces, respectively, to define (i) an equilaterally triangular surface between previously contiguous obtuse vertices, (ii) a regular pentagonal surface between previously contiguous acute vertices, and (iii) a right angled parallelogram surface between the previously colinear outer edges of the rhombus and rhomboid surfaces, the triangular and pentagonal surfaces all being equivalent, respectively;

(c) the non-regular rhombic triacontahedronal form comprising the form defined by the said rhombus, rhomboid, triangular, pentagonal and right angle parallelogram surfaces.

4,364,208

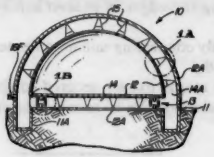
MULTI-WALLED STRUCTURES FOR CONTROLLED ENVIRONMENTAL USE

Pryce Wilson, 2510 ½ N. 7th St., Phoenix, Ariz. 85006

Filed Jan. 16, 1978, Ser. No. 869,832

Int. Cl.³ E04B *7/18;* E04D *13/03*

U.S. Cl. 52—82 **5 Claims**



1. A multi-walled object comprising:

a first wall member defining a domical configuration,

a second wall member defining a domical configuration positioned adjacent to said first wall member enclosing a space therebetween,

means for enclosing the space between said wall members,

V-shaped strut means mounted to extend between said first and second members at spaced positions for supporting the members,

said strut means comprising a pair of axially controlled magnets positioned with like poles juxtapositioned to each other and being formed to control the flow of energy between the members and having its base engaging one wall member and its apex engaging the other wall member,

valve means mounted in said first wall member operable for periodically controlling the ambient content of the atmosphere of said space between said first and second wall members, and

portal means for ingress and egress from said object,

said first and second wall members defining an enclosing space comprising the walls, floor and roof of the domical structure.

4,364,209

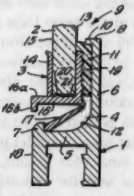
WINDOW GLAZING SYSTEM

Paul C. Gebhard, 21 S. Brookside Dr., White Meadow Lake, Rockaway, N.J. 07866

Filed Aug. 20, 1980, Ser. No. 179,770

Int. Cl.³ E06B *3/00*

U.S. Cl. 52—208 **15 Claims**



1. An impact resistant window structure or the like, having a quick replaceable glazing assembly which comprises

(a) a structural frame forming a primary opening,

(b) said structural frame comprising a channel-forming mem-

ber having a base portion, a front flange extending inward of said opening from said base portion, and a lip-forming flange spaced from said front flange,

(c) said lip-forming flanges, in the structural frame forming an access opening larger than said primary opening,

(d) said glazing assembly including a glazing panel of a size an shape corresponding generally to said openings,

(e) said glazing assembly further including a glazing frame engaging and extending about the periphery of said glazing panel,

(f) said glazing frame being formed of glazing strips of unitary, monolithic, extruded construction and including at least a base portion, a back flange extending from said base portion and overlying the back peripheral surface areas of said panel, and integral snap-in locking strips,

(g) the base portions of certain of said glazing strips having front portions and said locking strips being integrally joined with said front portions and running lengthwise of said strips,

(h) said locking strips extending at an angle rearward and outward with respect to said opening,

(i) the glazing assembly of said glazing panel and glazing strips being of larger dimensions than said primary opening and, exclusive of said locking strips, smaller than said access opening,

(j) the peripheral dimensions of said glazing assembly, including said locking strips, being larger than said access opening, and also larger than the opening defined by the base portions of said structural frame,

(k) said locking strips being flexibly and resiliently related to the base portions of said glazing strips by reason of a reduced thickness, hinge-like connection thereto, whereby said locking strips are resiliently displaceable toward said base portions,

(l) said lip-forming flanges being recessed for locking engagement with the backwardly extending free end of said locking strips upon insertion of said glazing assembly into said structural frame,

(m) resilient sealing means interposed between the front flanges of said structural frame and the front peripheral surface portions of said glazing assembly to form a seal,

(n) said sealing means being disposed about substantially the entire periphery of said structure and being sufficiently compressible to accommodate forward movement of the displaced locking strips past said lip-forming flanges,

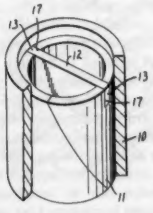
(o) said sealing strips being retained under substantial compression by said glazing assembly when said locking strips are engaged in said recesses.

4,364,210

FIRE BARRIER DEVICE

Peter B. Fleming, Woodbury, Minn.; Richard R. Licht, New Richmond, Wis., and Joseph C. Peisert, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed May 29, 1980, Ser. No. 154,456
Int. Cl.³ E04B 5/48
U.S. Cl. 52—221 **24 Claims**



1. A fire barrier device for providing fire and smoke stoppage in penetrations through walls, floors, partitions and ceilings comprising:

(a) a sleeve of intumescent sheet material lining the interior of said penetration and affixed to the wall of said penetration, said sleeve occupying only a minor portion of said penetration, and said intumescent sheet material operable to expand when said penetration is subjected to elevated temperatures and substantially fill said lined penetration; and

(b) at least one end cap positioned at one end of said sleeve, said end cap capable of being penetrated by pipes or cables passing through said lined penetration and conforming around said pipes or cables, and said end cap capable of sealing said penetration against the passage of flames, smoke and gases through said penetration from one end to the other;

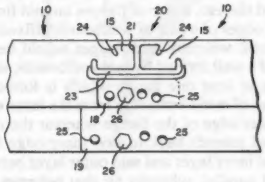
said fire barrier device being capable of allowing any number and most sizes of pipes or cables to be placed, removed, or replaced without disruption of said intumescent sleeve material, and said fire barrier device providing a wide clearance between said pipes or cables and said intumescent sleeve.

4,364,211

POOL PANEL CONNECTOR SYSTEM

George F. Arp, Fairport, N.Y., and James M. Nichols, Old Saybrook, Conn., assignors to Heldor Associates, Inc., Morris Township, Morris County, N.J.

Filed Dec. 8, 1980, Ser. No. 213,934
Int. Cl.³ E04H 3/18
U.S. Cl. 52—245 **17 Claims**



1. A system of interconnected molded resin panels forming a curved pool wall, each of said panels having a facing wall, base flange, and top flange, and said system comprising:

a. each end of said facing wall having a vertical margin approximately aligned with said facing wall and juxaposed between adjacent panels;

b. each of said margins having an inner groove and an outer groove that extend vertically and are laterally spaced and oblique to each other;

c. a locking strip arranged vertically to straddle and hold a joint between said adjacent panels positioned in a predetermined orientation to each other;

d. said locking strip being generally H-shaped in cross section and having a cross web disposed between said juxtaposed margins and inner and outer spans overlapping said juxtaposed margins;

e. the vertical edges of said inner and outer spans having acutely in-turned ribs engaged in said grooves in said margins;

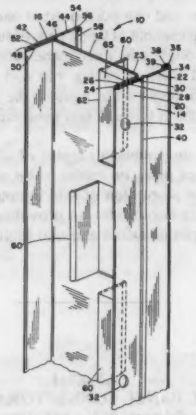
f. said bottom and top flanges extending beyond said margins in a region outward from said margins and being arranged to overlap in said predetermined orientation; and

g. bolts connecting said overlapped flanges.

4,364,212
FIRE-RESISTANT METAL STUD

Robert J. Pearson, Tonawanda, and Rodney G. Buergin, Snyder, both of N.Y., assignors to National Gypsum Company, Dallas, Tex.

Division of Ser. No. 730,994, Oct. 8, 1976. This application Oct. 25, 1977, Ser. No. 845,010
Int. Cl.³ E04B 1/00
U.S. Cl. 52—281 14 Claims

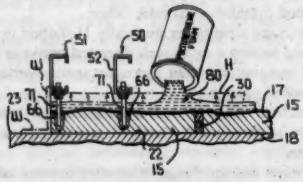


1. A fire-resistant metal stud for supporting a vertical wall comprising an elongate formed sheet metal body having an elongate first side and, opposite thereto, an elongate second side, elongate means central thereof adjoining said first side and said second side, means on said second side for affixing wallboard thereto, a pair of flanges on said first side adapted to have the edges of a pair of wallboards affixed against the inner side thereof, whereby said flanges would be disposed on the surface of a wall formed by said wallboards, said pair of flanges including at least one flange which is formed from an inner layer sheet of metal extending from the inner edge of the flange to the outer edge of the flange whereat the metal is reversely folded and extends back to said inner edge forming an outer layer, said inner layer and said outer layer being closely spaced apart and parallel, whereby air that becomes heated will tend to move vertically upward within a gap between said inner layer and said outer layer, said outer layer having a plurality of holes therethrough spaced apart lengthwise therealong.

4,364,213
COMPOSITE BUILDING PANEL

Charles W. Biesanz, Sr., Winona, Minn., assignor to Tru-Split Tool Company, Winona, Minn.

Filed Aug. 22, 1980, Ser. No. 180,404
Int. Cl.³ E04C 1/00
U.S. Cl. 52—309.17 25 Claims



1. A composite building panel comprising a plurality of generally flat exterior elements disposed in generally coplanar relative relationship, said elements each being defined by inner, outer and peripheral surfaces, at least some of said peripheral surfaces of some of said elements being disposed in spaced relationship to define gaps therebetween, adhesive means for at least in part filling said gaps and at least in part covering said inner surfaces, a generally planar sheet of plastic material overlying said plurality of elements and said adhesive means and being bonded to said plurality of elements by said adhesive means, means for defining a support frame, said support frame being in overlying relationship to said sheet of plastic material, and means passing through said sheet of plastic material for connecting at least one of said elements and said plastic sheet to said support frame.

4,364,214
DECORATIVE PANEL ASSEMBLY FOR VEHICLES

Cleon Morgan; Richard Pluta, and John F. Thomas, Jr., all of Holland, Mich., assignors to Donnelly Mirrors, Inc., Holland, Mich.

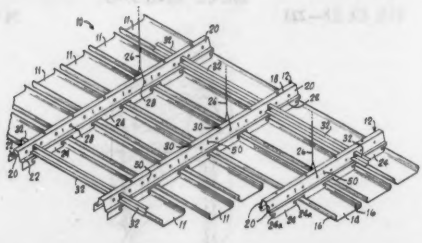
Filed Oct. 6, 1980, Ser. No. 194,470
Int. Cl.³ B44F 7/00
U.S. Cl. 52—311 25 Claims

1. A decorative panel assembly for vehicles adapted for installation as a unit from the exterior of a vehicle comprising:
a sheet-like panel having front, back and peripheral edge surfaces;
a frit layer fused to at least one of said surfaces of said panel;
attaching means secured to said panel on said frit layer for fastening said panel assembly to an adjacent support.

4,364,215
SUSPENDED CEILING ASSEMBLY AND STABILIZER BAR THEREFOR

J. Lynn Gailey, Newton Falls, and Carl A. Wollam, Cortland, both of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Jun. 18, 1980, Ser. No. 160,633
Int. Cl.³ E04B 5/52
U.S. Cl. 52—488 13 Claims



1. A stabilizer bar for interconnecting two adjacent ones of a plurality of spaced, elongated stringers in a suspended ceiling

assembly wherein the stringers are individually suspended and cooperatively carry an array of ceiling panels, and wherein each of said two adjacent stringers has a longitudinally extending flat web portion facing the other of said two stringers, said stabilizer bar comprising

(a) a rigid elongated element having opposed ends and dimensioned to extend between the two stringers such that the stringers are respectively disposed at said ends;

(b) first and second interlocking means respectively formed at the ends of said element for respectively snap-fittingly engaging the two stringers to hold the element against longitudinal movement relative to the stringers; and

(c) first and second means respectively formed adjacent the ends of said element for respectively bearing against the two stringers, upon engagement of the interlocking means with the stringers, to prevent relative angular movement of the stringers and the element and thereby, in cooperation with other like stabilizer bars interconnecting stringers of the assembly, to maintain the stringers fixed in orientation relative to each other and to prevent racking of the assembly,

(d) each of said bearing means comprising a pair of flanges respectively having edges disposed to simultaneously abut a surface of the web portion of one of said two stringers, along extended lines of contact spaced transversely of the length of the stringer, upon snap-fitting engagement of the adjacent one of said interlocking means with said one stringer.

4,364,216

STRUCTURAL UNIT IN THE FORM OF A PROFILED BAR

Ernst Koller, Paradiesstrasse 64, CH-4102 Binningen, Switzerland

Filed Feb. 25, 1980, Ser. No. 124,458

Claims priority, application Switzerland, Nov. 17, 1979, 10231/79; Fed. Rep. of Germany, Dec. 19, 1979, 2951068

Int. Cl.³ E04C *3/30*

U.S. Cl. 52—731 **25 Claims**

1. A structural element in the form of a shaped bar for attaching building parts and the like, having at least four longitudinal grooves which are arranged 90° apart on its periphery, of which grooves each of two longitudinal grooves arranged opposite each other has an outer section which becomes narrower trapezoidally from the outside to the inside and an inner section adjoining same which becomes wider from the narrowest point of the groove towards the inside, the base surface and the side surfaces of each of said longitudinal grooves being substantially flat and extending parallel to the corresponding surfaces of the other longitudinal groove arranged opposite same, the other two longitudinal grooves arranged 90° from the first mentioned two longitudinal grooves having a cross-sectional shape which becomes trapezoidally larger from the outside to the inside, the base surface and side surfaces of each of the said other two longitudinal grooves extending parallel to the corresponding surfaces of the other said longitudinal groove opposite same, said structural element having four flat outer surfaces which lie between the four longitudinal grooves and extend crosswise parallel to each other and four additional surfaces each extending between a boundary of a groove and one of said four flat outer surfaces the distance between diagonally opposite additional surfaces being greater than the distance between the first mentioned flat surfaces.

4,364,217

DEVICE FOR AUTOMATICALLY OPENING AND FILLING BOXES

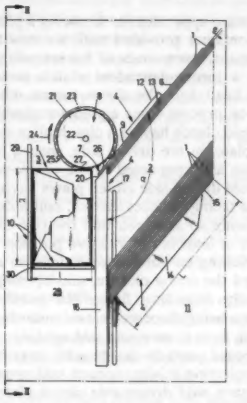
Angel E. Torrenteras, Avenue du Roi Albert, 176, and Antonio E. Torrenteras, Kruipweg, 66, both of Brussels, Belgium

Filed Mar. 14, 1980, Ser. No. 130,354

Claims priority, application Belgium, Mar. 16, 1979, 194070

Int. Cl.³ B65B *43/26, 57/00*

U.S. Cl. 53—58 **8 Claims**

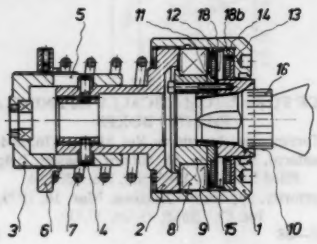


1. Device for conveying one at a time boxes in folded condition, said boxes being of the type having a quadrangular bottom which folds-back between side walls thereof when said side walls are brought together two by two relative to a plane at a right angle to the bottom and passing through a diagonal thereof, said boxes being transferred from a magazine wherein said boxes are stacked in folded condition to a station where said boxes are opened, the boxes being automatically opened during transfer thereof, said device comprising means inside the magazine to retain the boxes aligned in a stack in folded condition, in such a way that the side walls of said boxes bear on one another, means to exert a pressure towards one stack end, and means arranged at said stack end to allow the movement of a box in folded condition and cross-wise to the stack, said device comprising on the one hand, means to convey a box from said magazine to said station, said means bearing on the side walls of that box lying at said stack end and driving said box cross-wise to the stack over a distance at least equal to the box length in folded condition, and on the other hand, in the station where the boxes are opened, means to prevent the box being moved cross-wise to the stack, to insure the automatic opening thereof, said latter means being arranged at a distance, as considered in parallel relationship with the box movement from the magazine, which is at the most slightly larger than the length of a diagonal of the box bottom.

4,364,218
CLOSURE APPARATUS INCORPORATING A MAGNETIC CLUTCH FOR SCREWING-ON A PLASTIC SCREW CLOSURE

Albert Obrist, Kaiseraugst, Switzerland, assignor to Albert Obrist AG, Reinach, Switzerland

Filed Apr. 25, 1980, Ser. No. 143,751
Claims priority, application Switzerland, Apr. 25, 1979, 3885/79
Int. Cl.³ B65B 3/20
U.S. Cl. 53—331.5 **11 Claims**



1. A closure apparatus for screwing a plastics screw closure on to a container provided with a screw-thread, comprising drive means, a screw-on head for screwing on the screw closure, and a torque-dependent clutch arranged between the screw-on head and the drive means which interrupts the screwing-on process when a predeterminable desired torque is reached, said clutch having a clutch plate on the drive side and a clutch plate on the driven side, spaced from the drive-side clutch plate and connected to the screw-on head, said drive-side and said driven-side clutch plates having permanent magnets on the facing surfaces thereof, said poles of the permanent magnets being so arranged that the two clutch plates attract each other at least in one relative position thereof, said drive means including an outer body having an axial opening at its end toward the screw closure, said opening being defined by an inwardly extending flange-like portion, said drive-side clutch plate being disposed in said outer body on said flange-like portion so as to surround said opening, said screw-on head being disposed partially inside said outer body and having a portion projecting axially through said opening for engaging a screw closure, said driven-side clutch plate being disposed in said outer body and carried by said screw-on head so as to face said drive-side clutch plate, and roller bearing means carried by said outer body and rotatably supporting said screw-on head inside said outer body.

4,364,219
APPARATUS FOR SEALING CONTAINERS

Joe G. Luyett, Defiance, Mo.; Lawrence W. Ulrich, and Connie W. Walker, both of Bolingbrook, Ill., assignors to Durable Packaging Corporation, Chicago, Ill.

Filed Oct. 14, 1980, Ser. No. 196,617
Int. Cl.³ B65B 7/20
U.S. Cl. 53—374 **5 Claims**

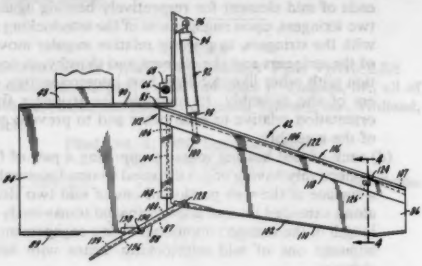
1. In combination with apparatus of the type used for sealing the foldable flaps of cartons, said apparatus including a frame structure and a vertically movable sealing head support assembly means mounted to said frame structure; and an improved plough mechanism secured to said sealing head support assembly means and movable therewith for infolding the leading and trailing top flaps, comprising:

(a) a plough member rigidly secured to said sealing head support assembly means and movable therewith;

(b) a longitudinally extending trailing flap folding member pivotally mounted at an outer end thereof to said sealing head support assembly means and slidably and pivotally mounted at an inner end thereof to said plough member;

(c) a leading flap folding member pivotally secured about a substantially horizontal axis at an outer portion thereof to said plough member and pivotally secured about a substantially horizontal axis at an inner portion thereof to said inner portion of said trailing flap folding member; and

(d) means for vertically moving, said sealing head support assembly means so that the inner ends of said trailing flap folding member and said leading flap folding member secured thereto are moved between an up position and a down position relative to said plough member such that the included angle between the lower flap contacting surfaces of said leading flap folding member and said trailing flap folding member is obtuse when said leading



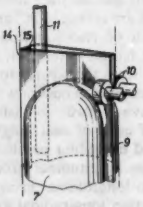
flap folding member and said trailing flap folding member are in their up position and the flap contacting surfaces of said leading flap folding member and said trailing flap folding member are in substantially the same horizontal plane when said leading flap folding member and said trailing flap folding member are in their down position;

(e) said flap contacting surfaces of said leading flap folding member and said trailing flap folding member being effective to respectively infold the leading and trailing top flaps as said plough mechanism is lowered into contact therewith and said trailing flap folding member and said leading flap folding member are moved to their down positions.

4,364,220
CONTAINER INTENDED FOR CONTENTS UNDER PRESSURE TOGETHER WITH A METHOD FOR THE MANUFACTURE OF SUCH A CONTAINER

Hans A. Rausing, Lund, Sweden, assignor to Tetra Pak International AB, Sweden

Filed Sep. 8, 1980, Ser. No. 184,885
Claims priority, application Sweden, Sep. 12, 1979, 7907560
Int. Cl.³ B65B 9/06, 47/04, 61/02
U.S. Cl. 53—411 **8 Claims**



1. A method for the manufacture of a container comprising the steps of providing at least two folding indication lines along a central portion of a web of sheet metal having at least one of its sides covered with a thermoplastic lining, said folding indication lines being parallel with a longitudinal axis of the web and with each other, compression moulding and simultaneously stretching areas of the web on each side of said folding

indication lines to obtain shell-shaped cavities situated directly opposite one another on the web and surrounded by flanges, folding the web along said folding indication lines such that non-moulded longitudinal edge zones of the web are brought together, sealing said edge zones to each other by surface melting the thermoplastic lining of the web within the edge zones thereby forming a tube of elongated, triangular cross-section with the compression moulded shell-shaped cavities facing one another in pairs on opposite side walls of the triangular tube and a flat base of the triangular tube being formed between said folding indication lines, introducing contents into the tube through a filler pipe passed into the tube, pressing the side walls of the triangular tube together adjacent the base and downstream of the filler pipe after filling of the individual facing cavities to flatten said base to form a flat flange, subsequently sealing the tube along the flanges, dividing the tube into individual containers by cutting or punching through the web in the area between successive containers, and folding the flanges around the filled cavity of the container against the container body.

4,364,221

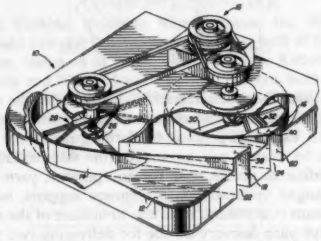
LAWN MOWER

Marvin J. Wixom, 1505 W. Pierce St, Phoenix, Ariz. 85007

Filed Jul. 2, 1981, Ser. No. 279,826

Int. Cl.³ A01D *35/264*

U.S. Cl. 56—13.6 **3 Claims**



1. A lawn mower capable of cutting a wide path through grass, comprising:

a housing;

at least two blade housings mounted substantially diagonally opposed to each other on said housing;

a cuting blade rotatively mounted in each of the said blade housings;

separate exit shoot means coupled to each one of said to blade housings to accomodate the removal of grass clippings from each one of the said two blade housings, each of said two blade housings comprising a separate wall which follows generally the arcuate path of its respective cutting blade except for that portion of the arcuate path corresponding to the entry of its respective exit shoot, each of said separate exit shoots comprising different first and second walls leading from its respective blade housing to an outlet portion on one side of said housing;

a cleaner blade associated with and mounted at right angles to each cutting blade;

said cleaner blade comprising a frame portion having slots and a substantially rigid rubber wiper having two L-shaped sections located within said slots along the top-horizontal and side-vertical edges of said frame portion;

wherein the exterior portion of said rubber wiper is close to the interior of said blade housing.

4,364,222

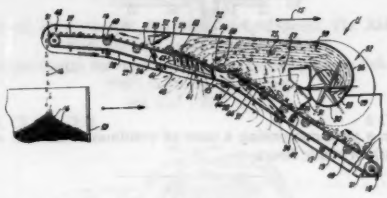
NUT HARVESTING MACHINE

Barry Ramacher, Stockton, Calif., assignor to Ramacher Manufacturing Company, Linden, Calif.

Filed Jul. 27, 1981, Ser. No. 286,923

Int. Cl.³ A01D *51/00, 46/00;* B07B *4/00*

U.S. Cl. 56—328 R **15 Claims**



1. A nut harvesting machine for crop collection and trash separation comprising:

a. an elongated fore and aft frame mounted on ground-engaging wheels for advancing along a path defined by a windrowed mixture of nuts and orchard trash;

b. a foraminous endless conveyor mounted on said frame in a fore and aft direction, the upper run of said conveyor moving from a forward ingress end to an after egress end;

c. means for picking up and depositing the windrowed mixture on said forward end of said upper run;

d. a housing substantially enclosing said conveyor, said housing including a first air vent and an air outlet and defining a channel for the flow of air from said first air vent to said outlet;

e. a fan having a suction port and a discharge port;

f. means for collecting said fan to said housing to induce the flow of air into said first air vent, through said channel and outwardly through said outlet into said fan, said channel directing air through said upper run in a nut and trash separation zone; and,

g. an elongated fore and aft plate below said upper run, said plate forming in conjunction with said housing a fore and aft settling zone with substantially horizontal air flow, said settling zone being of sufficient length to allow any entrained nuts to descend onto said upper run while lighter trash continues beyond said settling zone into said fan and outwardly through said discharge port to return to the ground.

4,364,223

PROCESS FOR PRODUCING A COMBINATION YARN

Louis Vignon, Geneva, Switzerland, assignor to Heberlein Hispano SA, Geneva, Switzerland

Filed Sep. 5, 1979, Ser. No. 72,593

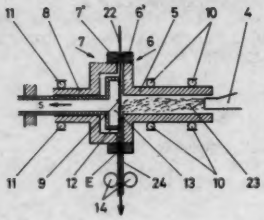
Claims priority, application Switzerland, Sep. 5, 1978, 9333/78

Int. Cl.³ D01H *1/135;* D02G *3/36*

U.S. Cl. 57—5 **7 Claims**

1. A process for the production of a combination yarn comprising a core of continuous filament and a sheath of staple fibers, comprising conveying the staple fibers in a current of air to a suction surface comprising a perforated collecting surface exposed to relative suction in a suction zone, the current of air moving at generally right angles to the surfaces of two counterrotating friction discs having narrowly spaced opposing faces defining a gap located relatively radially outwardly of the axis of said current of air, transferring the staple fibers from the suction zone generally at right angles to the axis of said current of air and into said gap so as to impart twist to the

fibers, and uniting a continuous filament with the staple fiber in the suction zone so as to be twisted therewith in said gap to



form a yarn comprising a core of continuous filament and a sheath of staple fibers.

4,364,224

CONTROLLING A YARN PACKAGE AT A WINDING STATION

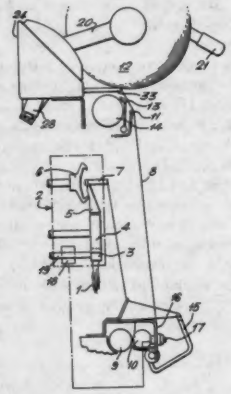
Clifford Deanings, 2d Moss Hall Rd., and Alan Smith, 206 Dill Hall La., both of, Accrington, Lancashire, England

Continuation of Ser. No. 20,571, Mar. 15, 1979, abandoned. This application Dec. 30, 1980, Ser. No. 221,601

Claims priority, application United Kingdom, Mar. 16, 1978, 10414/78

Int. Cl.³ D01H *15/00*; B65H *67/08, 49/20*

U.S. Cl. 57—263 **7 Claims**



1. In an apparatus for winding a strand of yarn onto a bobbin tube to form and build a yarn package, said apparatus including a driving roller, package support means for holding said tube and supporting it at a position of contact of said tube and yarn thereon with said driving roller and for moving said tube and yarn thereon to a plurality of positions spaced away from said position of contact whereat said tube and yarn thereon are not driven, restoring force means for applying to said tube and yarn thereon a force which tends to move said tube and yarn thereon toward said position of contact and then for maintaining a substantially constant pressure at said position of contact to enhance uniform driving of said tube and yarn thereon for continued winding of yarn thereabout, and retaining and releasing means for retaining said package of tube and yarn thereon at a one of said plurality of said spaced away positions against the impetus of said restoring force of said restoring force means and for releasing said package from said one of said plurality of said spaced away positions namely said retaining position and for thereby permitting said package to be moved to said contact position under the impetus of said restoring force imposed by said means therefor, an improvement comprising

engaging means for engaging said retaining and releasing means with said package such that said retaining means retains said package at said retaining position and spaced away from said driving roller, and for disengaging said retaining means from engagement with said package upon movement of said package by a very small amount to yet another one of said plurality of said spaced away positions for thereby permitting said package to be moved to said contact position under the impetus of said restoring force imposed by said means therefor.

4,364,225

MACHINE FOR PRODUCING SELF-TWISTING YARNS

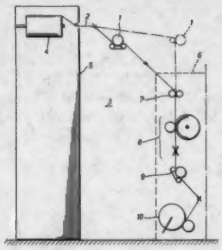
Jean-Louis Faure, Roanne, France, assignor to ASA S.A., Villeurbanne, France

Filed Sep. 5, 1980, Ser. No. 184,277

Claims priority, application France, Sep. 20, 1979, 79 23871

Int. Cl.³ D02G *3/28*

U.S. Cl. 57—291 **15 Claims**



1. A machine for producing self-twisting yarns, the machine comprising a plurality of identical working positions arranged side by side, each said position comprising means for feeding the yarn to be treated, and, separated from said feeding means so as to define an access zone for an operator, yarn-treating means arranged vertically on a common support, said yarn treating means comprising, from top to bottom of the support, (a) a positive yarn delivery device for delivering two yarns in parallel, (b) means to impart an alternate twist to at least one of the two yarns, and for permitting the self-twisting of the two yarns around one another, and (c) means for winding up the self-twisted yarn produced, said means for imparting twist and said means for winding up being separated by a zone in which said self-twisting can occur.

4,364,226

DEVICE FOR INSERTING A SENSOR INTO THE EXHAUST CONDUITS OF AN INTERNAL COMBUSTION ENGINE AND A FUEL-CONTROL SYSTEM USING SUCH A DEVICE

Michel Croset, and Gonzalo Velasco, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 15, 1980, Ser. No. 186,846

Claims priority, application France, Sep. 14, 1979, 79 22986

Int. Cl.³ F01N *7/18*; G01N *27/28*; G01K *1/14*

U.S. Cl. 60—276 **8 Claims**

1. A device for supporting at least one sensor in at least one exhaust conduit of an internal combustion engine having a cylinder head and at least one exhaust port each, said sensor being adapted to measure at least one parameter of the exhaust gasses in said conduit and including output leads conveying electrical signals representative of said parameters, said device comprising:

a flat element formed by at least one sheet of insulating and compressible material resistant to high temperatures;

fixing means for fixing said flat element in a gas tight manner between two pieces of each said exhaust conduit;

a first aperture having walls defined by said flat element, said first aperture being coaxial with, and having the same dimensions as, said exhaust conduit, whereby said flat element forms a gasket in said exhaust conduit;

at least one first cavity having walls defined by said flat element and extending to said first aperture, whereby each said first cavity communicates with said exhaust conduit but is out of the flow path of gasses in said exhaust conduit, each said first cavity being adapted to support said sensor; and

means associated with said flat element for rigidly supporting said leads of each said sensor, whereby each said sensor is rigidly held in one said first cavity.

4,364,227

FEEDBACK CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

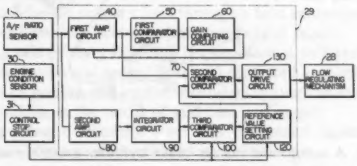
Seietsu Yoshida; Yukihide Niimi; Massao Ito, all of Kariya; Hiroshi Sawada, and Takayuki Demura, both of Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Mar. 27, 1981, Ser. No. 248,282

Claims priority, application Japan, Mar. 28, 1980, 55-39747

Int. Cl.³ F01N *3/22*; F02M *7/24*

U.S. Cl. 60—276 **2 Claims**



1. A feedback control apparatus for internal combustion engines comprising:

an exhaust gas sensor for generating a detection signal indicative of the concentration of one component of the exhaust gases from an engine;

an amplifier circuit for amplifying said detection signal, the gain of the amplifier circuit being variable;

a first-comparator circuit for comparing an output of said amplifier circuit with a predetermined first reference value;

a gain computing circuit responsive to the comparison result of said first comparator circuit to vary the gain of said amplifier circuit and thereby to maintain a maximum value of the output of said amplifier circuit substantially constant;

a second comparator circuit for comparing the output of said amplifier circuit with a variable second reference value, the output signal of said second comparator circuit being a pulse signal having a variable time width which feedback controls the air-fuel ratio of said engine;

a third comparator circuit for comparing an integrated value of the detection signal of said exhaust gas sensor with a third reference value corresponding to a predetermined air-fuel ratio; and

a reference setting circuit responsive to an output of said third comparator circuit to vary said second reference value.

4,364,228

HYDRAULIC TURBINE SYSTEM WITH SIPHON ACTION

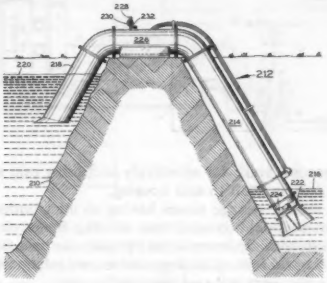
J. David Eller, 33 NW. 2nd St., Deerfield Beach, Fla. 33441

Filed Jul. 25, 1980, Ser. No. 173,194

The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.

Int. Cl.³ F15B *15/18*

U.S. Cl. 60—398 **4 Claims**



1. In a hydraulic hydroelectric turbine system comprising:

an electric generator;

rotary turbine blades;

hydraulic pump means for operation by rotation of said blades;

hydraulic motor means operatively mechanically coupled to said generator for driving the same and having an inlet and outlet;

a hydraulic fluid reservoir hydraulically coupled to said outlet of said motor means;

connecting means including hydraulic lines connecting said pump means respectively to said inlet of said hydraulic motor means and to said reservoir in a closed hydraulic loop for operating said motor means by hydraulic fluid pumped by said pump means in response to rotation of said turbine blades by water flow;

and a priming unit for priming said turbine system;

the improvement wherein:

said turbine blades, said hydraulic pump means and said priming unit are unified in an axial flow unit which has an annular outer casing that is generally U-shaped and includes two legs and a bight section interconnecting the two legs.

4,364,229

AUTOMOTIVE ENERGY MANAGING TRANSMISSION

Samuel Shiber, Mundelein, Ill., assignor to Timetz, Ltd., Holon, Israel

Filed Feb. 19, 1981, Ser. No. 235,977

Int. Cl.³ F16D *31/00*; F16H *39/08*; F15B *1/02*

U.S. Cl. 60—414 **6 Claims**

1. An automotive energy managing transmission comprising in combination:

a housing,

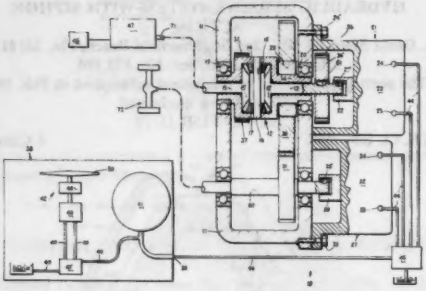
a differential having a first, a second and a third input/output shaft,

a first hydraulic unit having a first input/output member coupled to said first input/output shaft, a first reaction

member attached to said housing, a first inlet port and a first outlet port,

a second hydraulic unit having a second input/output member coupled through a clutch to said second input/output shaft, a second reaction member attached to said housing, a second inlet port and a second outlet port,

a first brake for selectively anchoring said first input/output shaft to said housing,



a second brake for selectively anchoring said second input-/output shaft to said housing,

an energy storage means having an inlet/outlet port,

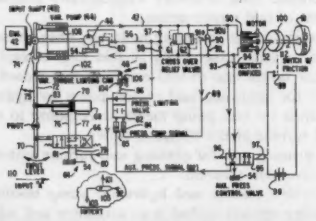
first hydraulic conduit and valving means for selectively establishing connections between the said first inlet port, the said first outlet port, said second inlet port, said second outlet port and said inlet/outlet port.

4,364,230

HYDROSTATIC TRANSMISSION OVERSPEED PREVENTION CIRCUIT

William K. Holmes, Rothschild, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 7, 1980, Ser. No. 194,765
Int. Cl.³ F16H *39/46*; F04B *49/02*
U.S. Cl. 60—444 **13 Claims**



1. In a material handling machine having: a closed loop hydrostatic power transmission system driven by a prime mover to move a load using a hydraulic motor and a variable displacement hydraulic pump fluidly coupled together by two fluid conduits; a charging system to make up fluid lost by leakage from said transmission; a reservoir to collect leakage and to supply fluid to said charging system; and a servomechanism, powered by fluid supplied from said charging system through a pipe to control the quantity and direction of flow from said pump to said motor by tilting a swash plate in said pump, a hydraulic circuit to prevent overspeeding the prime mover driving said pump, comprising:

(a) a shut-off valve in said pipe for establishing flow between the charging system and the servomechanism, said valve including a biasing means for normally urging said valve to its open position;

(b) operating means, linked to said shut-off valve, for closing said shut-off valve to control the operation of said servomechanism in response to the direction of rotation of said motor, and the pressure of the fluid in said conduits, said operating means including:

first pilot means, opposing said biasing means, for closing said shut-off valve in response to the pressure of the fluid in that one of said two fluid conduits supplying fluid between the hydraulic pump and the hydraulic motor which is at the higher pressure, said biasing means being overcome by said first pilot means in the event that the pressure in said one conduit is due to a heavily loaded pump; and

second pilot means, opposing said biasing means and in parallel with said first pilot means, for closing said shut-off valve in response to the pressure in that main conduit which for a given direction of rotation of said motor would be pressurized by said motor due to the rotational inertia of said load, said biasing means being overcome by said second pilot means in the event that the pressure in said main conduit is due to reducing the angle of the swash plate in the pump and an inertially powered motor functioning as a pump, whereby the acceleration of the prime mover induced by the rotation of the swash plate by said servomechanism is limited by the torque or pressure loading on said pump and the direction that said motor rotates;

(c) direction sensing means for sensing the direction of rotation of said motor and controlling said second pilot means; and

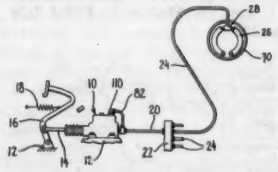
(d) control valve means responsive to said direction sensing means for transmitting pressure from a selected main conduit to said second pilot means.

4,364,231

COMPOUND MASTER BRAKE CYLINDER

Robert M. Dwyer, Livonia, and Edwin J. Skiba, Sterling Heights, both of Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.

Filed Apr. 23, 1980, Ser. No. 142,944
Int. Cl.³ B60T *11/02*
U.S. Cl. 60—577 **3 Claims**



1. A compound master brake cylinder assembly adapted for use in a hydraulic braking system, said system having braking elements connected by an outlet to said compound master brake cylinder assembly, said assembly comprising:

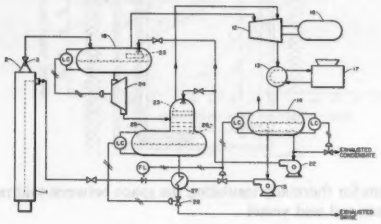
a fluid reservoir, a first chamber defining structure adapted to be placed in communication with the reservoir, a first piston slidable relative to said first structure, a second chamber formed within the first piston and adapted to be placed in communication with the outlet, a second piston slidable relative to said second chamber between first and second positions, force applying means capable of initially causing the first piston to move relative to the first chamber defining structure, and to subsequently cause the second piston to move relative to the second chamber, and relief valve means extending between the first chamber and reservoir and responsive to outlet pressure and first chamber pressure and capable of venting fluid from the first chamber to reservoir while progressively reducing first chamber pressure in response to progressive increase in outlet pressure above a predetermined limit whereby the force applied by the force applying means does not substantially vary while the first chamber pressure is being reduced after the outlet pressure exceeds the predeter-

mined limit, the relief valve means including a poppet valve normally spring biased to a closed position, first pilot operated means responsive to outlet pressure, and second pilot operated means responsive to first chamber pressure, said first and second pilot operated means acting against the poppet valve to vent fluid from the first chamber.

4,364,232
FLOWING GEOTHERMAL WELLS AND HEAT RECOVERY SYSTEMS

Itzhak Sheinbaum, 2038 E. Altadena Dr., Altadena, Calif. 91107

Filed Dec. 3, 1979, Ser. No. 99,674
Int. Cl.³ F01K *7/00*
U.S. Cl. 60—641.2 **11 Claims**



1. A process causing a geothermal well to flow, comprising: injecting a primary fluid into a geothermal well; controlling the level of injection and the rate of injection of primary fluid by a plurality of control valves in a casing of the geothermal well; flowing the geothermal fluid mixture from said well;

separating said geothermal well flow into a geothermal liquid phase and a gaseous phase; said gaseous phase comprising vaporized primary fluid and steam;

expanding said gaseous phase through a power extraction gas expansion device;

condensing the expanded gaseous phase and separating steam condensate from condensed primary fluid; passing said condensed primary fluid through a heat exchanger to extract heat from said separated geothermal liquid;

injecting said primary fluid into the geothermal well casing;

extracting additional power from said separated geothermal liquid by passing said geothermal liquid through an expansion turbine at the outlet of said heat exchanger;

utilizing steam condensate from said condensed expanded gaseous phase to wash said gaseous phase.

4,364,233
FLUID ENGINE

John H. Stang, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 31, 1980, Ser. No. 221,798
Int. Cl.³ F02G *1/02*
U.S. Cl. 60—712 **10 Claims**

1. An internal combustion Stirling cycle engine comprising:

(a) means defining a hot side chamber and a cold side chamber;

(b) means defining a passageway interconnecting said hot and cold side chambers;

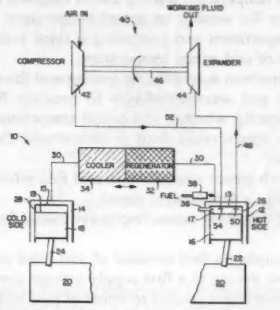
(c) a hot side piston and a cold side piston respectively reciprocably mounted in said hot and cold side chambers for varying the volume thereof;

(d) means for connecting said pistons in a predetermined phased relationship for producing a rotary output in response to reciprocation of said pistons;

(e) a regenerator in said passageway between said hot and cold side chambers for removing heat from working fluid directed from said hot to said cold side chamber and adding heat to working fluid directed from said cold to said hot side chamber;

(f) a heat exchanger in said passageway between said regenerator and said cold side chamber for removing heat from said working fluid in said passageway whereby the cold side temperature can be maintained within a predetermined range;

(g) means for injecting fuel into said interconnecting passageway between said regenerator and said hot side chamber as working fluid is directed from said cold to said hot side chamber, whereby turbulence within said passageway insures complete working fluid-fuel mixing;



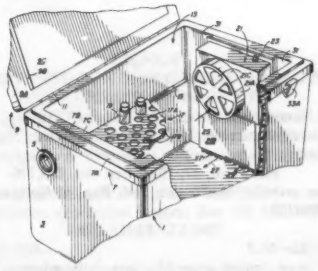
(h) means for initiating combustion within said hot side chamber; and

(i) means for admitting predetermined quantities of fresh air to and exhausting predetermined quantities of working fluid and combustion products from said hot side chamber.

4,364,234
CONTROL CIRCUITRY FOR THERMOELECTRIC ENVIRONMENTAL CHAMBER

Michael A. Reed, Tucson, Ariz., assignor to Koolatron Industries, Ltd., Ontario, Canada

Filed Mar. 25, 1981, Ser. No. 247,634
Int. Cl.³ F25B *21/02*; G01K *13/00*
U.S. Cl. 62—3 **12 Claims**



1. Circuitry for controlling a solid state thermoelectric device in a thermoelectric environmental chamber, said solid state thermoelectric device being in thermal communication with an internal heat exchanger disposed inside a thermal compartment of said thermoelectric environmental chamber and an external heat exchanger disposed outside of said thermal compartment, said circuitry comprising in combination:

a. temperature selecting means for digital selecting of a temperature that is desired to be maintained in said thermal compartment;

b. first means responsive to said temperature selecting means for producing a first current representative of said selected temperature;

c. second means responsive to said first current for producing a first voltage representative of a first upper range limit of said selected temperature;

d. third means responsive to said first current for producing a second voltage representative of a first lower range limit for said selected temperature;

e. first temperature sensing means disposed in said compartment for sensing an actual temperature in said thermal compartment and producing a third voltage representative of said actual temperature;

f. comparison means for comparing said third voltage to said first and second voltages to produce first information indicating whether said actual temperature is above said first upper range limit or below said first lower range limit;

g. fourth means responsive to said first information for producing a first control signal;

h. first switching means responsive to said first control signal for

i. coupling a first terminal of said solid state thermoelectric device to a first supply voltage conductor and,

ii. coupling a second terminal of said solid state thermoelectric device to a second supply voltage conductor,

if said third voltage is greater than said first voltage;

i. second switching means responsive to said first control signal for,

i. coupling said second terminal to said first supply voltage conductor and

ii. coupling said first terminal to said second supply voltage conductor

if said third voltage is less than said second voltage; and

j. first temperature indicating means responsive to said first temperature sensing means for producing a perceivable indication of said actual temperature.

4,364,235

HELIUM-COOLED COLD SURFACE, ESPECIALLY FOR A CRYOPUMP

Johann Hemmerich, Jülich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 238,770

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008128

Int. Cl.³ B04D *8/00*

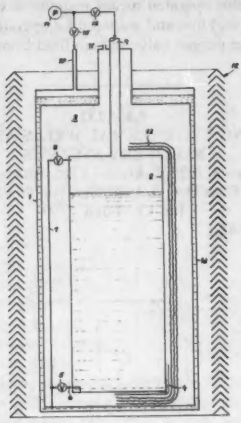
U.S. Cl. 62—55.5 **8 Claims**

1. A deep-cooled assembly especially adapted to form a cryosurface for a cryopump, comprising:

a liquid helium reservoir;

a double-wall outer vessel spacedly surrounding said reservoir and formed with at least one deep-cooled surface and at least one compartment formed between walls of said vessel;

a duct connecting the bottom of said compartment with the bottom of the interior of said receptacle and provided with a duct whereby said deep-cooled surface is cooled by transfer of liquid helium from said reservoir into said compartment through said duct and said surface is warmed upon transfer of liquid helium from said compartment through said duct into said reservoir; and



means for thermally insulating the space between said reservoir and said vessel.

4,364,236

REFRIGERANT RECOVERY AND RECHARGING SYSTEM

Ralph C. Lower, Bryan, and Roger D. Shirley, West Unity, both of Ohio, assignors to Robinair Manufacturing Corporation, Montpelier, Ohio

Filed Dec. 1, 1980, Ser. No. 211,571

Int. Cl.³ F25B *45/00*

U.S. Cl. 62—77 **11 Claims**

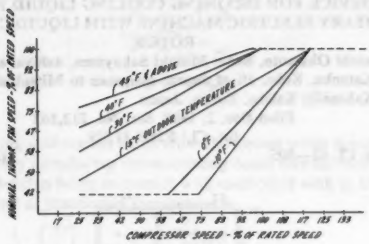
1. The method of servicing a closed refrigeration system having a refrigerant containing an oil lubricant comprising the steps of evacuating the refrigerant from the refrigeration system, separating the oil from the refrigerant, automatically measuring the amount of oil removed from the evacuated refrigerant and automatically recharging the refrigeration system with an amount of oil lubricant substantially equal to the amount of oil separated from the evacuated refrigerant.

4,364,237

MICROCOMPUTER CONTROL FOR INVERTER-DRIVEN HEAT PUMP

Kenneth W. Cooper, and Jacob E. Shaffer, Jr., both of York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 2, 1981, Ser. No. 230,486
Int. Cl.³ F25B *13/00*; F25D *17/00*
U.S. Cl. 62—160 6 Claims



1. A vapor compression cycle heat pump system for conditioning a space and having a closed refrigerant circuit including a compressor, an indoor coil, an expansion device and an outdoor coil connected respectively in series, the system being capable of operation in the heating mode wherein said indoor coil functions as a refrigerant condenser, said system comprising;

a first sensing means for measuring the actual temperature of a space to be conditioned and generating an electrical signal representative of the measured temperature;

means for setting a reference temperature of the space to be conditioned and generating a second electrical signal representative of the reference temperature;

a second sensing means for measuring the temperature of the outdoor atmosphere and generating a third electrical signal representative of the outdoor atmospheric temperature;

an indoor coil fan to direct air into the conditioned space;

a variable speed motor driving said indoor coil fan;

a compressor motor for driving said compressor;

a first motor speed control means operatively associated with said compressor motor for controlling continuously and discretely the speed thereof between a predetermined minimum speed to a maximum predetermined speed;

a second motor speed control operatively associated with said indoor coil fan motor for controlling continuously and discretely the speed thereof between a predetermined minimum speed to a maximum predetermined speed;

programmed control means responsive to said first sensing means, said reference means, and said second sensing means for generating a first digital signal to drive said first motor speed control means, said programmed control means being further responsive to said first digital signal and said second sensing means for generating a second digital signal to drive said second motor speed control means; and

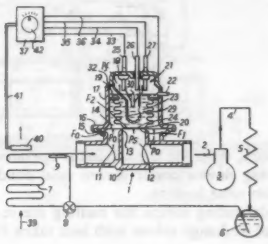
data processor means having a program coupled to said programmed control means for controlling the operation thereof to effect a predetermined temperature of the conditioned space and relate the speed of said indoor fan motor to the speed of said compressor motor.

4,364,238

VALVE FOR REFRIGERATION PLANT

Zbigniew R. Huelle, Sonderborg; Leif Nielsen, Nordborg, and Jakob S. Jakobsen, Sonderborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 956,572, Nov. 1, 1978, abandoned. This application Sep. 2, 1980, Ser. No. 183,270
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2749249
Int. Cl.³ F25B *41/04*
U.S. Cl. 62—217 1 Claim



1. A refrigeration system comprising, a compressor and an evaporator, a valve unit having an inlet and an outlet with an opening therebetween, said valve unit inlet being connected to the output side of said evaporator and said valve unit outlet being connected to the suction side of said compressor, chamber means for said valve unit, valving means comprising a movable wall for said chamber and closure means for said opening, a filling medium for said chamber having a vapor phase exerting a temperature responsive reference pressure P_f biasing said wall of said valving means in a valve closing direction, passage means for allowing the vapor pressure P_o or refrigerant in said inlet to bias said wall in a valve opening direction to provide a valve opening for said closure means corresponding to the difference between said P_o and P_f pressures, control means for controlling the temperature of said filling medium including heat transfer means and first feedback temperature sensing means in said chamber, said control means further including second feedback temperature sensing means in the air flow stream of said evaporator on the downstream side thereof, said filling medium having characteristics so that its temperature which brings about equilibrium between said biasing of said closure means in opening and closing directions is greater than either said refrigerant in said inlet or the surrounding air or both.

4,364,239

HOT WATER SUPPLY APPARATUS COMPRISING A THERMODYNAMIC CIRCUIT

Jules A. Chapelle, Orsay; Jean-Pierre Levacher; Emile Sanzey, both of La Courneuve, and Pierre Vironneau, Toulouse, all of France, assignors to Electricite de France (Service National), France

Filed Jun. 19, 1981, Ser. No. 275,191
Claims priority, application France, Jun. 20, 1980, 80 13831
Int. Cl.³ A63C *19/10*
U.S. Cl. 62—235.1 13 Claims

1. A hot water supply apparatus comprising:

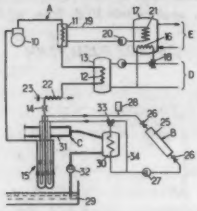
a thermodynamic circuit A containing a thermodynamic fluid in liquid and vapor phases, having compressor means, condensor means for heat exchange between said thermodynamic fluid and a high temperature source including a hot water circuit, expanding valve means and evaporator means arranged for heat exchange with a non-freezable heat carrying liquid,

a cold source comprising solar exchanger means, and a circuit for circulation of said heat carrying liquid,

a tank for receiving a body of water for heat storage,

heat exchange means arranged in said circuit for circulation of said heat carrying fluid and physically located above said tank,

pumping means for directing a flow of water from said tank to sprinkling means associated with said heat exchange



means, whereby the apparatus operates as a ice-manufacturing device under severe cold conditions and insufficient solar heating,

and defrosting means for melting ice in contact with said heat exchange means with heat taken from the apparatus.

4,364,240

TEMPERATURE-DEPENDENT OUTPUT CONTROL FOR A HEAT PUMP ABSORBER

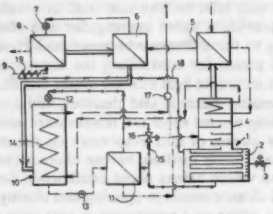
Siegfried Schulz, Dortmund; Karl-Günter Stroppel, Bochum, and Bernd Meckel, Hagen, all of Fed. Rep. of Germany, assignors to Volkswagenwerk AG, Wolfsburg, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 261,807

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018709

Int. Cl.³ F25B *15/00*

U.S. Cl. 62—476 **7 Claims**



1. In a heat pump for heating a heat carrying medium including an expeller, a condenser connected to said expeller for receiving hot refrigerant vapors from said expeller, an evaporator operatively connected with said condenser for receiving liquid refrigerant from said condenser, a heat exchanger for poor and rich solutions connected to said expeller for receiving poor solution from said expeller; an absorber connected to said heat exchanger for receiving poor solution from said heat exchanger through an expansion valve; said absorber being further connected to said expeller with the intermediary of said heat exchanger for applying rich solution from said absorber to said expeller; and heat exchanging conduit means arranged in said absorber for passing heat carrying medium through said absorber; the improvement comprising a bypass conduit connecting said expeller with said absorber and circumventing said heat exchanger for carrying one of said solutions between said expeller and said absorber with the circumvention of said heat exchanger; a valve contained in said bypass conduit; said valve having an open state in which communication is maintained through said bypass conduit between said expeller and said absorber; said valve having a closed state in which communication is blocked through said bypass conduit between said expeller and said absorber; temperature sensing means for responding to the flow temperature of the heat carrying medium exiting from said absorber; said temperature sensing means being connected to said valve for setting said valve into said open state when said flow temperature falls below a predetermined value; further wherein said heat exchanging conduit means have, within said absorber, heat exchanging surfaces so dimensioned as to effect thereon consideration of flash gas generated by expansion of the poor solution upon passage through said expansion valve.

4,364,241

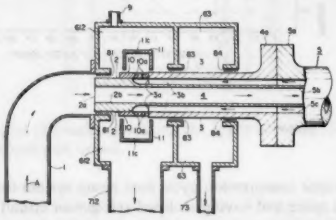
DEVICE FOR DRAINING COOLING LIQUID FROM ROTARY ELECTRIC MACHINE WITH LIQUID COOLED ROTOR

Kouichi Okamoto, Kobe; Masaki Sakuyama, Ashiya, and Kenji Kataoka, Kobe, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,162

Int. Cl.³ F25B *31/00*

U.S. Cl. 62—505 **15 Claims**



1. A device for conducting cooling fluid out of a liquid cooled rotary machine in which a cooling liquid circulating in the rotor of said rotary machine for cooling said machine is discharged through a discharging section of a cooling liquid supplying and draining pipe comprising:

an outlet chamber having an outlet passage;

means for maintaining a pressure in said outlet chamber higher than atmospheric pressure by a shielding gas; and

a cooling liquid containing member surrounding said discharging section, said cooling liquid containing member being arranged between said discharging section and said outlet passage, said cooling liquid containing member being fully filled with said cooling liquid discharged through said discharging section, discharging paths being formed between said cooling liquid containing member and said cooling liquid supplying and draining pipe which communicate with said outlet chamber.

4,364,242

METHOD OF REFRIGERATION AND A REFRIGERATION SYSTEM

Michael V. B. Smith, Sandton, South Africa, assignor to Engineering Management Services Limited, Transvaal Province, South Africa

Filed Jan. 21, 1981, Ser. No. 227,034

Claims priority, application South Africa, Feb. 4, 1980, 80/0637

Int. Cl.³ F25D *17/02*

U.S. Cl. 62—99 **18 Claims**

1. A method of cooling a liquid by circulating successive batches of liquid through a refrigeration circuit, which method comprises:

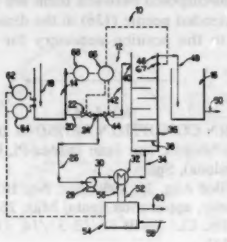
introducing each batch in turn into the refrigeration circuit;

when the batch has been introduced into the circuit, closing the circuit to form a closed series loop around which the batch can circulate;

circulating the batch around the series loop;

when the batch has been cooled to a desired temperature,

opening the circuit to permit said batch to be removed from the circuit and to permit a succeeding batch simultaneously to be introduced into the circuit; and



removing said cooled batch from the circuit while simultaneously introducing the succeeding batch into the circuit, the batches being in contact with each other with as little mixing as practicable therebetween.

4,364,243

CIRCULAR KNITTING MACHINE FOR THE PRODUCTION OF HIGH PILE FABRICS HAVING COMBED-IN FIBERS

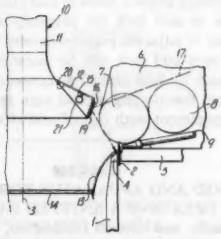
Klaus Kunde, Kohlberg, Fed. Rep. of Germany, assignor to Sulzer Morat GmbH, Fed. Rep. of Germany

Filed Sep. 16, 1980, Ser. No. 187,637

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939082

Int. Cl.³ D04B *9/14, 35/32*

U.S. Cl. 66—9 B **9 Claims**



1. Circular knitting machine for the production of high pile fabrics having combed-in fibers, having a needle cylinder in which knitting needles are displaceably mounted which define a circular knitting field along the upper edge of the needle cylinder, and having a plurality of carding devices disposed along the knitting field and an exhaust means disposed above the knitting field, characterized by at least one lamp (15) fastened to the exhaust means (10) for the illumination of the knitting field from within and by a mirror (16) fastened to the exhaust means (10) for the section-wise viewing of the inside of protions of the knitting field disposed on an side of the observer.

4,364,244

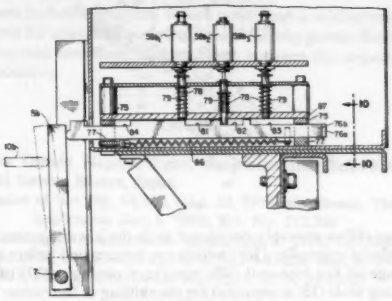
MEMORY CONTROLLED ELECTROMAGNETIC PASSIVE CONTROLLERS

Edmundas Vambutas, 369 Beverly Rd., Douglaston Manor, N.Y. 11363, and John Feltham, 123 Elm Leaf Crt., Port Richey, Fla. 33568

Continuation-in-part of Ser. No. 71,752, Aug. 31, 1979. This application Nov. 7, 1980, Ser. No. 204,844

Int. Cl.³ D04B *7/00, 15/66*

U.S. Cl. 66—75.2 **19 Claims**



1. A controller for a machine having a plurality of movable members each adapted to determine one or more functions of said machine in correspondence with any one of a plurality of positions of said member, said machine being adapted to have a sequence of statuses with each status corresponding to one set of positions of said movable members, said controller comprising

one or more movable stop elements adapted to interact with each of said movable members, each stop element being adapted in one position to determine a respective position for its respective member,

an electromagnetic device adapted to interact with a respective stop element to cause it to assume its one position determining the position of its respective movable member,

a counter actuated by each change of status of said machine for producing a counter signal representative of the number of such changes,

a memory device coupled to said counter and adapted to contain a set of stored data for each value of said number, each stored data set representing a set of actuations of said electromagnetic devices corresponding to a set of desired positions of said machine members,

said memory device also including a circuit responsive to said counter signal for producing signals representing the stored data set corresponding to the number represented by said counter signal, and

a control circuit for actuating said electromagnetic devices in response to said last-named signals.

4,364,245

KNITTING MACHINE

Eberahrd Leins, Filderstadt; Manfred Walter, Aichtal, and Willi Gaiser, Gäufelden, all of Fed. Rep. of Germany, assignors to Sulzer Morat GmbH, Fed. Rep. of Germany

Filed Jan. 13, 1981, Ser. No. 224,671

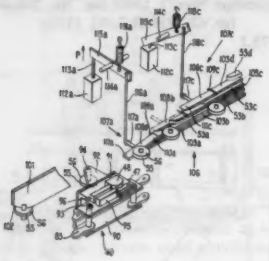
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003811

Int. Cl.³ D04B *7/00, 15/36, 35/00*

U.S. Cl. 66—78 **21 Claims**

1. Knitting machine having a needle bed in which knitting tools having projections are mounted for raising and lowering, with a cam unit which can be transported past the projections and which has at least one lowering cam acting on the projections of the knitting tools which is adjustable with regard to its

lowering depth and is joined to a runner, and having a plurality of pathways associated each with a preselected lowering depth of the lowering cam, which interact according to the pattern with the runner during the movement of the cam unit past the projections of the knitting tools, for the setting of the lowering cam to a preselected lowering depth, characterized in that the



runner (55) is movably connected with the lowering cam (48) and that a controller (106) which can be actuated before each passage of the cam unit (40) past the projections (39) of the knitting tools (15) is provided for the shifting of the runner (55) to the position required for interaction with a selected pathway (54).

4,364,246

KNITTING MACHINE

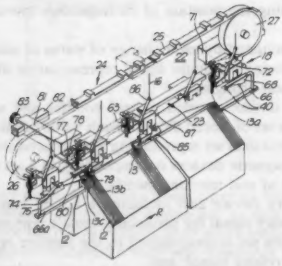
Eberhard Leins, Filderstadt; Manfred Walter, Aichtal, and Willi Gaiser, Gräfelden, all of Fed. Rep. of Germany, assignors to Sulzer Morat GmbH, Fed. Rep. of Germany

Filed Jan. 13, 1981, Ser. No. 224,691

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1980, 3003570

Int. Cl.³ D04B *35/00*

U.S. Cl. 66—145 R **30 Claims**



1. Knitting machine for performing knits having a beginning and an end, with at least one needle bed in which knitting needles are mounted for extension and retraction, with a plurality of thread carriers running successively on an endless path, which have at least one thread inserter and one thread clamp each, and are transportable through a work section for the insertion of threads into selected needles and through a return section for the return transport of threads from the end of the knit to the beginning of the knit, also with at least one thread cutting device for the cutting of the threads after their working by the last knitting needle and after they have been gripped in the corresponding thread gripper, and with a control device suitable for changing the knit width for the opening or closing of the thread grippers for the release or gripping of the thread ends obtained by means of the cutting device and carried by the thread carriers in the return transport, characterized in that the inserters (19) and thread grippers (50) which are associated with one another are, at least immediately before the insertion of the corresponding threads (16) into the first selected needles (13), spaced apart in a direction differing from the transport direction of the thread carriers (18) such that the thread portions disposed between them are each time caught by the first extended needle (13*b*) in the direction of transport and brought to the position necessary for the needles next selected.

4,364,247

YARN CONDITION SENSING DEVICE

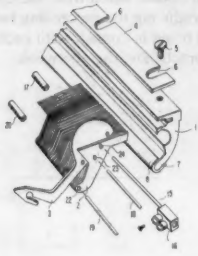
Joaquin Muns-Magem, and Juan Ibanez-Pi, both of Burgos, 3, Rubi, (Barcelona), Spain

Filed Aug. 26, 1980, Ser. No. 181,504

Claims priority, application Spain, Mar. 25, 1980, 249.980

Int. Cl.³ D04B *35/12, 35/14, 35/16*

U.S. Cl. 66—163 **6 Claims**



1. A yarn condition sensing device for a knitting machine comprising an elongated reed having top and bottom edges and a plurality of flat parallel plates protruding from one side thereof, a pair of elongated electrical contacts secured to said top and bottom edges respectively of said reed, at least one flat elongated weft yarn fork having an enlarged portion adjacent one end, a straight central portion and a bent end portion having an open-sided aperture therein for the reception of a yarn, said weft yarn fork having a plurality of aligned holes along one edge of said enlarged portion and each of said plates having a plurality of holes aligned with each other, and shaft means having electrical contact means at one end thereof extending through aligned holes in said plate and a selected one of said holes in said fork for pivotally mounting said fork between a pair of adjacent plates whereby upon normal operation of said yarn said fork will be maintained out of engagement with both of said electrical contacts on said reed and upon abnormal functioning of said yarn said fork will be pivoted into engagement with one of said electrical contacts.

4,364,248

METHOD AND APPARATUS FOR WET-HEAT TREATING A KNITTED FABRIC

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Feb. 19, 1981, Ser. No. 236,014

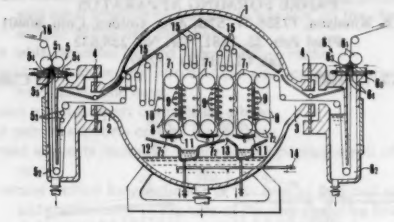
Claims priority, application Japan, Feb. 20, 1980, 55-19969; Feb. 20, 1980, 55-19970

Int. Cl.³ D06B *21/02*

U.S. Cl. 68—5 E **3 Claims**

1. An apparatus for wet-heat treating a knitted fabric in a high pressure steamer, comprising providing, in a steamer body maintained with a high temperature wet heat, a plurality of endless net conveyers extending vertically in spaced parallel relation and each said conveyer rotatable respectively by means of a pair of driving rolls spaced one above the other with adjacent said conveyers forming a fabric passage therebetween for transporting a knitted fabric in one of the up and

down directions and forming snaky undulations through the fabric passage under no tension, a plurality of liquid jet nozzles for jetting one of a treating solution and washing water through both sides of the net conveyers forming at least one of



the fabric passages, and a number of steam jet nozzles for jetting high temperature steam toward one side of at least one of the net conveyers spaced from the side through which the one of the treating solution and washing water is jetted for steaming the fabric more sufficiently.

4,364,249

CENTRAL DOOR-LOCK SYSTEM FOR MOTOR VEHICLES

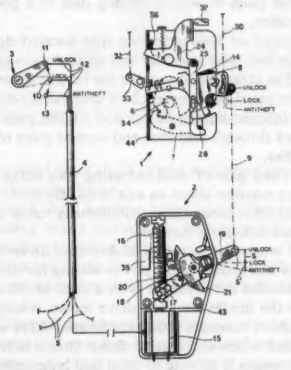
Frank Kleefeldt, Heiligenhaus, Fed. Rep. of Germany, assignor to Kiekert GmbH & Co. Kommanditgesellschaft, Heiligenhaus, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,978

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911680; Mar. 24, 1979, 2911681

Int. Cl.³ E05B *65/36, 47/02*

U.S. Cl. 70—264 **10 Claims**



1. A central door-lock system comprising:

a plurality of door latches each including

a detent displaceable between a closed position securing the respective door to the respective doorpost and an open position permitting the respective door to separate from the respective doorpost,

a manual door-opening handle,

mechanism including a primary latch member connected to said handle and connectable to said detent and movable between a lock position preventing said handle from displacing said detent between said open and closed positions and an unlock position permitting said handle to displace said detent between said open and closed positions,

means including a secondary latch member connected to said primary latch member and displaceable between a lock position urging said primary latch member into the respective lock position, an unlock position permitting said primary latch member to move freely between the respective lock and unlock positions, and an antitheft position positively holding said primary latch member in the respective lock position;

respective servoactuators for said latches each including an actuator element connected to the respective secondary latch member and means including a servomotor for displacing the respective secondary latch member via the respective actuator element between the respective lock, unlock, and antitheft positions; and

means including a central switch connected to said servomotors for operating same jointly and thereby jointly displacing said secondary latch members between the respective positions.

4,364,250

KEY HOLDER

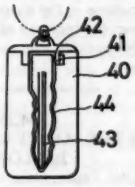
Minoru Toyoda, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Division of Ser. No. 68,568, Aug. 22, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,356

Claims priority, application Japan, Sep. 8, 1978, 53-110845; Feb. 6, 1979, 54-13025; Feb. 6, 1979, 54-13026; Feb. 6, 1979, 54-13027; Feb. 6, 1979, 54-13028; Feb. 6, 1979, 54-13029

Int. Cl.³ A47G *29/10*

U.S. Cl. 70—456 R **8 Claims**



1. A pendant type key holder comprising:

a body having a predetermined thickness and having a hollowed out portion formed therein, said body further comprising a thick upper portion;

a key pivotably mounted on said body and movable between an operating position in which the key is disposed outside said body and a non-operating position in which the key is housed within said body;

a pin member connected to said thick upper portion of said body for pivotably mounting said key to said thick upper portion of said body; and

means for supporting said body at said upper portion, wherein the key and said body rotate into coincident vertical planes, and wherein said key has an outer edge surface configuration including a serrated portion and wherein the edges of said hollowed out portion of said body closely correspond to said outer edge surface configuration of said key, including said serrated portion.

4,364,251

METHOD AND APPARATUS FOR COLD-WORKING ANNULAR WORKPIECES

Masao Nishihara, Kyoto; Yoshinori Fukui; Yoshio Kitamura, both of Hyogo; Yoshiyuki Kamikawa, and Haruki Azuma, both of Kobe, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Jan. 12, 1981, Ser. No. 224,023

Claims priority, application Japan, Aug. 12, 1980, 55-111195

Int. Cl.³ B21D *22/10*

U.S. Cl. 72—58 **2 Claims**

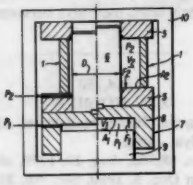
1. A method for cold working an annular workpiece by applying thereto an internal fluid pressure to cause diametric

enlargement of said workpiece through plastic deformation, said method comprising:

forming annular grooves around marginal edges of openings at axially opposite ends of said annular workpiece

fitting a packing of ring form in each one of said annular grooves; and

covering each of said openings with a presser plate and holding said presser plates in slidably pressed contact with said packings during the process of diametric enlargement of said annular workpiece and said packing by application



of an increasing internal pressure, including the step of maintaining the contacting surface pressure of said packings and pressure plates at a predetermined value by detecting and calculating values indicative of a main pressure internally acting on said annular workpiece an auxiliary pressure pressing said presser plate against said packing and variations in the shape of said annular workpiece resulting from the increase of said main pressure thereby continuously working said annular workpiece by plastic deformation.

4,364,252

METHOD FOR THE MANUFACTURE OF DIAPHRAGM BELLOWS

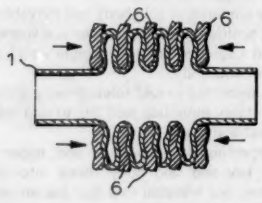
Chie Koizumi, Kobe, Japan, assignor to Osaka Rasenkan Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 29, 1980, Ser. No. 201,964

Claims priority, application Japan, Apr. 12, 1980, 55-48220

Int. Cl.³ B21D *15/06*

U.S. Cl. 72—59 **5 Claims**



1. A method of manufacturing a diaphragm bellows from a metallic pipe comprising the steps of:

(1) surrounding said pipe with two spaced apart mold members having confronting side surfaces having a space therebetween, said confronting surfaces each having adjacent convex and concave portions, the convex portion of each confronting surface facing the concave confronting surface of the other;

(2) bulging a portion of said pipe into said space by imparting a pressure to the interior of said pipe;

(3) bulging a succession of adjacent portions of said pipe to form a succession of bulges in said pipe by performing steps (1) and (2) at said succession of adjacent portions; and

(4) compressing said opposite sides of said bulges against respective confronting surfaces of said molds to form a longitudinal succession of projections each having gently curved wavy surfaces having convex and concave portions.

4,364,253

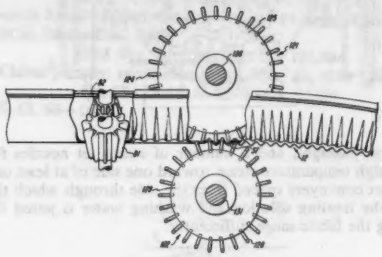
PANEL FORMING APPARATUS

Gary A. Knudson, 17356 W. 57th Ave., Golden, Colo. 80401

Filed Feb. 23, 1981, Ser. No. 236,832

Int. Cl.³ B21D *47/00*

U.S. Cl. 72—187 **11 Claims**



1. In a panel forming apparatus for producing a curved panel from a straight panel having upwardly inclined sidewall portions extending from an intermediate wall portion, the combination comprising:

first and second pairs of wall-indenting dies spaced from one another to receive therebetween each inclined sidewall portion of a straight panel,

said pairs of wall-indenting dies being mounted for free rotation about an axis in an idle mode of operation;

a first drive means to simultaneously rotate said first and second pairs of wall-indenting dies in a power mode of operation;

a third pair of wall-indenting dies located downstream of and in line with said first and second pairs of wall-indenting dies arranged to receive the intermediate wall portion of the panel between each of said third pairs and engage said intermediate wall portion of the panel after it has passed through said first and second pairs of wall-indenting dies,

said third pair of wall-indenting dies being mounted for free rotation about an axis in an idle mode of operation;

a second drive means to simultaneously rotate said third pair of wall-indenting dies; and

control means for said first and second drive means including an idle setting and a power setting for each of said first and second drive means with a control circuit that alternates the modes for each drive means whereby when the first drive means is idling the second drive means is driving and when the second drive means is idling the first drive means is driving to form said indentations when said panel is passed continuously through said pairs of indenting dies.

4,364,254

COMBINED SHEET BENDING BRAKE, TABLE AND COIL SUPPORT

Arthur B. Chubb, Wyandotte, and James J. Rhoades, Garden City, both of Mich., assignors to Tapco Products Company, Inc., Detroit, Mich.

Filed Sep. 8, 1980, Ser. No. 185,276

Int. Cl.³ B21D *5/04, 7/06, 43/00*

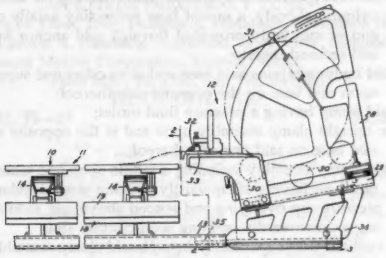
U.S. Cl. 72—319 **22 Claims**

1. A combined sheet bending brake, table and coil support comprising

a sheet bending brake including a base,

a first bending member having a clamping surface mounted on said base,

a second member having a bending surface,
means for hinging said second member to said first member,
an anvil member extending longitudinally of said first bending member,
and means for clamping a workpiece by applying pressure to said anvil member to clamp a workpiece on the clamping surface of the first member,
a table mounted on said sheet bending brake,
said table extending horizontally and rearwardly from the anvil along the base,
and a coil support comprising a base,
a pair of supports carried by the base,
said supports including means for supporting a roll of sheet stock,
means carried longitudinally of the base of said coil support and transversely of the base of the sheet bending brake for defining a flat clamping surface,
and means for clamping the edge of the uncoiled sheet stock against said last-mentioned surface,
and means for mounting the base of said coil stand on the base of said sheet metal brake such that the axis of the roll of sheet stock extends transversely of the longitudinal axis of the sheet bending brake,
means for mounting said table for movement from a position generally horizontal with respect to said clamping surface to a position rearwardly of said base of said sheet brake,
said last mentioned means pivoting said table about an axis generally longitudinally of said brake,
said table being positioned with respect to said coil support



so that uncoiled sheet stock can be supported thereon over said sheet bending brake.

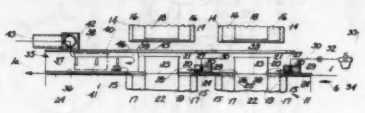
19. A combined sheet bending brake and table comprising
a sheet bending brake including a base comprising spaced longitudinally extending rails,
said sheet bending brake including a plurality of C-shaped members positioned on said rails at longitudinally spaced points,
each said C-shaped member comprising a lower arm fixed to said base and an upper arm spaced from and overlying said lower arm,
a first bending member having a clamping surface mounted on lower arms,
a second member having a bending surface,
means for hinging said second member to said first member about a longitudinal axis,
an anvil member extending longitudinally of said first bending member,
and means for clamping a workpiece by applying pressure to said anvil member to clamp a workpiece on the clamping surface of the first member,
and a table mounted on said sheet bending brake,
said table overlying said C-shaped members extending horizontally and rearwardly from the anvil and longitudinally along the base,
said table having an upper surface substantially planar and uninterrupted,
means for mounting said table for movement from an operative position generally horizontal with respect to said clamping surface for supporting workpieces to an inoperative position rearwardly of said base of said sheet brake.

4,364,255

CONTROLLED ORIENTED DISCHARGE OF CUPS FROM A BLANKING AND FORMING PRESS

James I. Byrd, Sidney, Ohio, assignor to The Stolle Corporation, Sidney, Ohio

Filed Oct. 20, 1980, Ser. No. 198,298
Int. Cl.³ B21D *45/00*
U.S. Cl. 72—345 **5 Claims**



1. In a press for blanking and drawing flanged cups of the type having cooperating upper and lower blanking punches for cutting a circular blank from a strip of product stock material, upper and lower pressure pads for capturing the blank to prevent wrinkling, a drawing punch cooperating with a drawing die for forming from the blank a cup having a flange around the upper edge, and a lift-out member movable within said drawing die for lifting the bottom of the formed cup to a position slightly higher than the upper surface in the drawing die to locate the formed cup in a discharge position, the improvement in combination therewith comprising a separator plate closely overlying the material strip and having an opening permitting free passage therethrough of said upper blanking punch, said opening being positioned and configured to permit free movement without stumbling of the formed cup onto the plate, means for discharging the blanked and drawn cup from the die area of the press including chute means positioned adjacent said discharge position for accepting and guiding the formed cups in a controlled oriented fashion comprising a conduit-like chute positioned adjacent said discharge position and including a lower surface, spaced parallel vertical sidewalls extending away from said discharge position, and an upper surface spaced from an overlying said plate, said chute being dimensioned to permit free passage of the formed cup therethrough, and conveyor means for moving the formed cups through the chute, said conveyor means including hollow manifolds forming said sidewalls, a plurality of slots in the inner surface of said sidewall spaced along the axis of the chute and angled at acute angles away from said discharge position, and means for supplying a flow of high volume low pressure air to said sidewalls to provide directional air flow from said slots to assist the formed cups in moving through said chute, and means for moving the formed cups from said discharge position into said chute comprising an air exhaust nozzle positioned adjacent said discharge position and means for providing a pressurized air pulse from said air exhaust nozzle to move the formed cups into said chute.

4,364,256

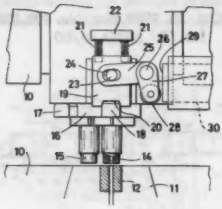
LATCHING DEVICE FOR THE PUNCH-CARRIER PLATE OF A PRESS FOR MOULDING SCREWS, RIVETS AND LIKE ARTICLES

Eufemia Garlaschi, Via Victor Hugo 4, Milan, Italy

Filed Mar. 12, 1981, Ser. No. 242,926
Claims priority, application Italy, Dec. 22, 1980, 23708/80[U]
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—356 **4 Claims**

1. A latching device for the punch-carrier plate of a press for moulding screws, rivets and like articles, in which the punch-carrier plate is mounted frontally of a ram having a rectilinear reciprocal motion in a direction parallel to the axis(es) of the press die(s) and is capable of being rotated in either sense through a preselected angle between two working positions

wherein it can be latched by means mounted on the ram, characterized in that it comprises a latching member slidably mounted on the ram and equipped with a frontal hollow space adapted to cooperate alternately with either of two projecting extensions integral with the punch-carrier plate, said latching member being subjected to the action of resilient means capable of keeping its frontal hollow space in engagement with either of said extensions, means being additionally provided for controllably shifting said latching member against the bias of said resilient means out of engagement with said extensions to permit the oscillation of said punch-carrier plate from either of its working positions to the other and vice versa.

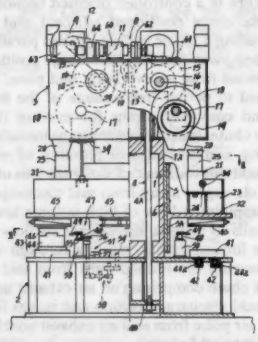


4,364,257

ROTARY TRANSFER PRESS

Takuro Endo, Tokyo; Yukio Tomita, Osaka; Yukiro Okamoto, Nara; Hiroshi Imaoka, Nara, and Michio Sakiyama, Nara, all of Japan, assignors to Hitachi Shipbuilding & Engineering Company Limited, Osaka, Japan

Filed Jul. 10, 1980, Ser. No. 168,288
Claims priority, application Japan, Jul. 2, 1979, 54-84184
Int. Cl.³ B21J *13/08*
U.S. Cl. 72—405 **7 Claims**



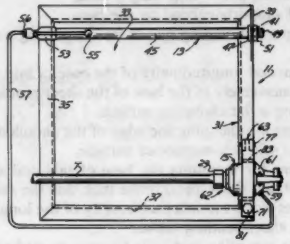
1. A rotary transfer press comprising a bed; a post mounted upright on the bed, a slide upwardly and downwardly movable as guided along the post; a vertically driving assembly for moving the slide upward and downward; a plurality of working stations disposed in a circular arrangement and each provided with a pair of press dies; an annular feed bar extending in the vicinity of the working stations, said feed bar being provided with a toothed portion therealong; and a feed bar driving mechanism comprising a feeding drive shaft mechanically connected to and rotated by the vertically driving assembly, cam means actuated by the rotation of the drive shaft, a lever actuated and rocked by the cam means, a rack bar connected to and moved reciprocally linearly by the lever, a gear mounted on a shaft and meshing with the rack bar, and a pinion mounted on the same shaft as said gear and meshing with the toothed portion of the feed bar, whereby the rotation of the feeding drive shaft is transmitted to the feed bar as an intermittent reciprocal turning motion.

4,364,258

HOLDER FOR HYDRAULIC SWAGING TOOL

Peter Davidson, 1655 Fair Ct., Grosse Pointe, Mich. 48236

Filed Jun. 29, 1981, Ser. No. 278,187
Int. Cl.³ B21J *9/12*
U.S. Cl. 72—453.15 **9 Claims**



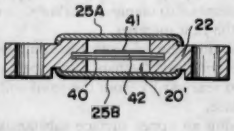
1. A holder for a hydraulic swaging tool comprising a base;
an upright anchor bracket upon and at one end of said base on one side thereof, having a mount aperture therethrough;
a manually actuated hydraulic pump having an elongated cylindrical body, a mount boss projecting axially of one end of said body projected through said anchor bracket and secured thereto;
said body overlying said base and at its other end supported upon said base on the opposite side thereof;
said pump having a pressure fluid outlet;
an upright clamp assembly upon and at the opposite end of said base on said one side thereof;
said clamp assembly including a saddle upon and secured to said base having an upwardly opening semi-circular slot;
a pressure cap overlying and spaced above said saddle having a downwardly opening semi-circular slot;
a resilient sleeve extending through said clamp assembly and nested within said saddle and pressure cap;
a swaging tool having a cylindrical body and having a pressure fluid inlet and a swaging head, said tool body axially nested within said sleeve and clamp assembly;
means for adjustably securing said pressure cap to said saddle frictionally anchoring said swaging tool body;
and a conduit fluidly interconnecting said pump outlet and said swaging tool inlet.

4,364,259

VIBRATION SENSOR FOR AN AUTOMOTIVE VEHICLE ENGINE

Shigeo Muranaka, and Michio Onoda, both of Yokohama, Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Jul. 8, 1980, Ser. No. 166,946
Claims priority, application Japan, Jul. 13, 1979, 54-88941
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **5 Claims**



1. A vibration sensor for an automotive vehicle engine comprising:

(a) a piezoelectric disc, a first disc-shaped metal electrode co-axially affixed to one surface of and having substantially the same diameter as said piezoelectric disc, a second disc-shaped metal electrode co-axially affixed to the other surface of and having a smaller diameter than said piezoelectric disc to increase the diaphragm vibration sensitivity of the vibration sensor;

(b) a holder for said piezoelectric disc including means for mounting said holder on the vehicle engine, said holder being formed and bonded around the peripheral edge of said piezoelectric disc and being made of a material which contracts during the bonding process to apply sustained compressional force to said piezoelectric disc; and

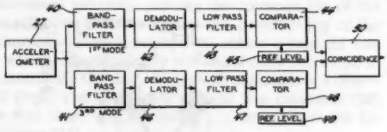
(c) a pair of protective covers affixed to both sides of said holder, said covers sandwiching and covering said piezoelectric disc and being spaced therefrom to provide cavities adjacent both sides of said piezoelectric disc.

4,364,260

ENGINE WITH KNOCK SENSING APPARATUS HAVING MULTIPLE FREQUENCY TUNING

Francis H. Chen, Troy; Douglas A. Feldmaier, Bloomfield Hills, and James A. Hamburg, Southfield, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 16, 1981, Ser. No. 243,882
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **2 Claims**



1. In combination:

a spark ignited internal combustion engine having at least one combustion chamber characterized by a plurality of cavity resonance modes and excitable by knock to vibrate in these resonance modes at resonance frequencies corresponding thereto, the engine being responsive to these knock-induced vibrations to vibrate therewith at the resonance frequencies and further being responsive to other events to vibrate at frequencies which may include one of the resonance frequencies;

vibration sensing means having a tuned response to vibrations at a plurality of the resonance frequencies, said means having a portion fixed to the engine for vibration therewith and having a plurality of output channels, one for each said tuned resonance frequency, on which channel is generated a signal when vibrations are sensed at that frequency;

signal processing apparatus for each output channel operative in response to said signals, respectively; and

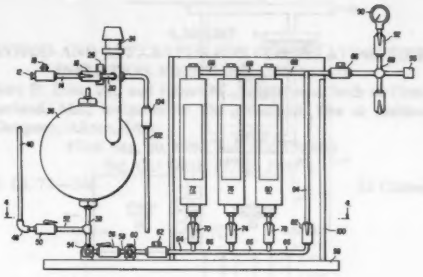
coincidence sensing means effective to generate a knock signal only when the signal processing apparatus indicates significant vibrations simultaneously on all channels, whereby knock induced vibrations may be more reliably distinguished from other vibrations, even if they share one of the resonance frequencies.

4,364,261

MULTI-MEDIA LEAK TEST APPARATUS

Herbert Askwith, West Palm Beach, and Larry Sage, North Palm Beach, both of Fla., assignors to N.E.R.G. Enterprises, Inc., Riviera Beach, Fla.

Filed Mar. 25, 1981, Ser. No. 247,608
Int. Cl.³ G01M *3/32*
U.S. Cl. 73—40 **8 Claims**



1. Apparatus for detecting and measuring leakage in closed systems, comprising:

pressure regulating means for adjusting a gas input to the apparatus to a predetermined pressure;

means for directing the pressurized gas to one of at least two different test sections of said leakage testing apparatus; said at least two different test sections including at least a gas test section and a water test section;

said gas test section being comprised of:

a gas section manifold for receiving pressurized gas directed thereto; said gas section manifold having a plurality of channels located therein for the pressurized gas to travel through, and each of said plurality of channels including a control valve and a range flow meter; said plurality of range flow meters providing a plurality of different ranges of flow measurements through said plurality of channels;

an outlet pressure gauge connected to the output from said gas section manifold for monitoring the pressure of the pressurized gas from said gas section manifold; and

means for connecting the output from said gas section manifold to a part of said closed system to be tested for leakage and with the rate of leakage from said closed system being indicated on the one of the flow meters that is able to meter the loss of pressurized gas from said closed system and likewise from said leakage testing apparatus;

said water test section being comprised of:

a water reservoir tank partially filled with water and receiving said pressurized gas as an input;

a water section manifold for receiving water forced from said water reservoir tank by said pressurized gas; said water section manifold having a plurality of channels located therein for the pressurized water to travel through and each of said plurality of channels including a control valve and a range flow meter; said plurality of range flow meters providing a plurality of different ranges of flow measurements through said plurality of channels;

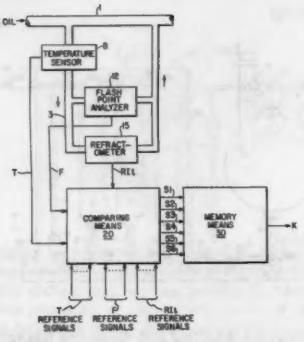
an outlet pressure gauge connected to the output from said water section manifold for monitoring the pressure of the pressurized water from said water section manifold; and

means for connecting the output from said water section manifold to a part of said closed system to be tested for leakage and with the rate of leakage from said closed system being indicated on the one of the flow meters that is able to meter the loss of pressurized water from said closed system and likewise from said leakage testing apparatus.

4,364,262
CHARACTERIZATION FACTOR MONITOR

Robert A. Woodle, Nederland, Tex., and Ronald G. Gillespie, Old Tappan, N.J., assignors to Texaco, Inc., White Plains, N.Y.

Filed Mar. 26, 1981, Ser. No. 247,654
Int. Cl.³ G01N *11/00*
U.S. Cl. 73—53 8 Claims



1. A monitor which provides a signal K corresponding to the characterization factor of oil, comprises:

means for sampling the oil and providing signals F and RIt corresponding to the flash point temperature in degrees F and the refractive index of the oil, respectively,

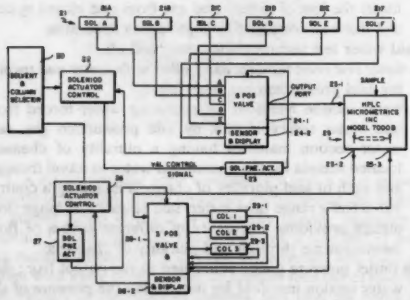
means for sensing the temperature of the oil and providing a signal T representative thereof, and

output means connected to the sampling means and to the temperature sensing means for providing signal K in accordance with signals F, RIt and T.

4,364,263
HIGH PRESSURE LIQUID CHROMATOGRAPHIC SYSTEM

Varghese L. Sankoorikal, and Keith D. Holmes, Jr., both of Greenville, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Sep. 15, 1980, Ser. No. 187,322
Int. Cl.³ G01N *31/08*
U.S. Cl. 73—61.1 C 5 Claims

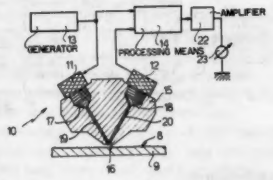


1. A high pressure liquid chromatographic system comprising a plurality of first means for providing a liquid phase, a plurality of columns, second means for receiving a sample to be analyzed and said liquid phase for transmission therefrom to said columns, first selector means coupled between said first means and said second means, said first selector means comprising means for producing electrical pulse signals, a first solenoid valve means and a first solenoid coupled thereto, said first solenoid valve means responsive to a signal which signal is selectively applied to said first solenoid valve means as a result of the presence or absence of an electrical pulse signal applied to said first solenoid, a source of air coupled to said first solenoid valve means, a first pneumatic actuator coupled to said first solenoid valve means and a multiple position valve coupled to said first actuator and between said first means and said second means, said pulse signals applied to the aforementioned first solenoid causing at least one of said first means to be selected to provide a liquid phase to said second means, second selector means coupled between said second means to receive the sample and liquid phase therefrom and permit it to be provided to a selected column, said second selector means comprising means for producing electrical pulse signals, second solenoid valve means and a second solenoid coupled thereto, said second solenoid valve means responsive to a signal which is selectively applied to said second solenoid valve means as a result of the presence or absence of an electrical pulse signal applied to said second solenoid, a source of air coupled to said second solenoid valve means, a second pneumatic actuator coupled to said second solenoid valve means and a multiple position valve coupled to said second actuator and between said columns and said first means, said pulse signals applied to the latter mentioned second solenoid selectively causing second means to be coupled to a selected one of said columns.

4,364,264
FEELER DEVICE FOR MEASURING SURFACE ROUGHNESS

Stefano Re Fiorentin, Turin, Italy, assignor to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Dec. 31, 1980, Ser. No. 221,616
Claims priority, application Italy, Jan. 8, 1980, 67019 A/80
Int. Cl.³ G01B *17/00*
U.S. Cl. 73—105 14 Claims



1. A feeler device for measuring the degree of roughness of an uneven surface 8 being examined, characterized by comprising:

a transmitting transducer 11 arranged to convert an electric signal of a predetermined frequency into an ultrasonic wave propagated through a liquid coupling medium and having a wavelength of the same order of magnitude as said unevenness;

a generator 13 arranged to generate said electric signal and feeding said transmitting transducer 11;

a receiving transducer 12 arranged to receive the ultrasonic wave reflected by said examined surface 8;

a support head 15 for said transmitting transducer 11 and receiving transducer 12, said head 15 comprising a base surface 16 to be rested on said examined surface 8, and said transducers 11, 12 being housed in such a manner that the respective transmitting and receiving directions define two coplanar lines which converge at said base surface and which form the same angle with this latter;

and

processing means 14 connected to said transmitting transducer 11 and to said receiving transducer 12, and providing an indication of the phase difference between the ultrasonic signals respectively transmitted and received by

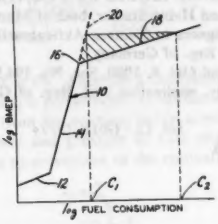
said transducers when said base surface 16 of said head 15 rests on said examined surface 8.

4,364,265

METHOD AND APPARATUS FOR OBTAINING AN EFFICIENTLY RUNNING INTERNAL COMBUSTION ENGINE

John Dickson, 3855 Valley Hill Rd., Bloomfield Hills, Mich. 48013

Filed Oct. 26, 1981, Ser. No. 314,762
Int. Cl.³ G01M 15/00
U.S. Cl. 73—113 3 Claims



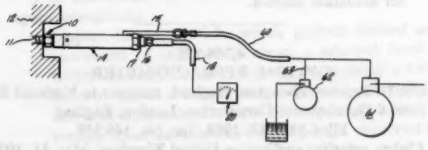
1. A method of characterizing an efficiently running internal combustion engine of the type having fuel input means for supplying various degrees of fuel consumption at various torque loads placed upon the engine and spark-generating means for providing a spark to ignite the fuel at various timing intervals, said method comprising the steps of; operating an engine at a constant rpm while increasing the torque load on the engine, measuring the torque value at predetermined intervals of torque load to obtain a brake mean effective pressure for each of said intervals, measuring the fuel consumption at said predetermined intervals, plotting the common log of the brake mean effective pressure against the common log of the fuel consumption for each interval to obtain a straight line curve (10) which extends linearly with a constant first slope to a D-point coordinate (16) and after which continues at a different second slope, and plotting a straight line extension (20) having the first slope and extending upwardly from the D-point coordinate (16).

4,364,266

ENGINE ANALYZER APPARATUS

James F. Williams, 25217 Rye Canyon Rd., Valencia, Calif. 91355

Filed Nov. 13, 1980, Ser. No. 206,536
Int. Cl.³ G01M 15/00
U.S. Cl. 73—115 20 Claims



1. An apparatus for use with an engine analyzer system employing a transducer responsive to the characteristic being analyzed, the combination of:

an adapter means including means for releasable connection between the engine and the transducer and physically separating the transducer from the engine;

said adapter having a first fluid passage means therethrough communicating the engine with the transducer and a second fluid passage means therethrough in heat exchange relationship with and separate from said first fluid passage means, said second fluid passage means having an inlet located near said transducer and an outlet located adjacent said means for releasable connection; and

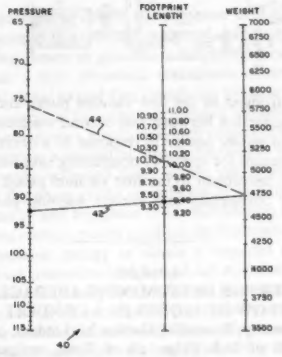
means for supplying a fluid through said second fluid passage means from said inlet to said outlet for cooling the adapter and the gas in communication with the transducer to provide maximum cooling at the transducer to prevent damage to the transducer.

4,364,267

METHOD AND APPARATUS FOR CORRELATING TIRE INFLATION PRESSURE AND LOAD

Robert R. Love, Jr., and Elbert W. Leatherman, both of Cumberland, Md., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 20, 1980, Ser. No. 179,630
Int. Cl.³ G01L 17/00, 1/00
U.S. Cl. 73—146 13 Claims



1. A method of correlating tire pressure and loading comprising the steps of:

gauging the tire inflation pressure;

providing footprint determining means on a hard, non-deflecting smooth backing;

placing the tire, inflated and loaded, on the footprint determining means which is supported to give proper tire loading under full load of the tire to obtain an actual footprint;

removing the tire and its load from the footprint determining means;

comparing the actual footprint formed on the footprint determining means to means for determining footprint length to obtain an actual footprint length; and

using the footprint length and tire pressure to determine the actual load on the tire.

4,364,268

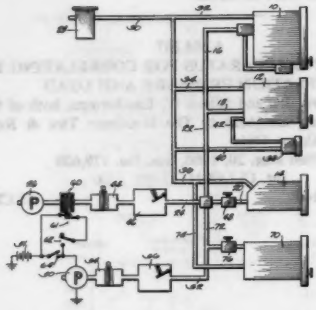
REDUNDANT VACUUM SYSTEM FOR AIRCRAFT INSTRUMENTS

Thomas Zompolas, Milwaukee, Wis., assignor to PAMCO Industries Corp., Milwaukee, Wis.

Continuation-in-part of Ser. No. 202,940, Nov. 3, 1980, abandoned. This application May 4, 1981, Ser. No. 260,290
Int. Cl.³ G01C 21/00
U.S. Cl. 73—178 R 24 Claims

1. A redundant vacuum system for use in a vacuum operated instrument system of an aircraft, the aircraft including an engine and an electrical power source, the vacuum operated instrument system including a first vacuum pump operably connected to the aircraft engine so as to be driven by the aircraft engine, at least one vacuum operated instrument, and means for operably connecting the vacuum operated instru-

ment to the first vacuum pump, the redundant vacuum system including a second vacuum pump, means for operably connecting the second vacuum pump to the electrical power source of the aircraft, said means for operably connecting the second vacuum pump including a vacuum responsive switch means connected to said means for operably connecting the vacuum



operated instrument to the first vacuum pump and providing electrical connection between said second vacuum pump and said electrical power source in response to a decrease in vacuum in said means for operably connecting said vacuum operated vacuum instrument to the first vacuum pump, and means for operably connecting said second vacuum pump to said instrument.

4,364,269

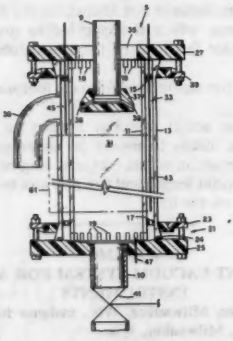
FLOWMETER FOR DETERMINING AVERAGE RATE OF FLOW OF LIQUID IN A CONDUIT

John M. Kennerly, Knoxville; Gordon M. Lindner, and John C. Rowe, both of Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 30, 1981, Ser. No. 258,971

Int. Cl.³ G01F *3/38*

U.S. Cl. 73—223 **10 Claims**



1. Apparatus for use in determining the average rate of flow of a liquid through a conduit, comprising:

a vessel partitioned by a generally vertically extending baffle into first and second liquid-storage chambers, each provided with means for venting gas from the upper portion thereof, the first chamber arranged to receive said liquid from said conduit as a downflowing stream and having a cross-sectional area exceeding that of the received stream of liquid, the first chamber having a lower zone thereof in fluid communication with a lower zone of the second chamber to permit liquid so received to establish liquid levels in both of said chambers,

a lower probe and an upper probe in the second chamber for respectively sensing the liquid level therein at points above said lower zone thereof, and

means connected to the probes for generating an output indicative of the time required for the liquid level in the second chamber to successively contact said lower probe and said upper probe.

4,364,270

DEVICE FOR PNEUMATICALLY SCANNING THE LEVEL OF LIQUID IN A CONTAINER

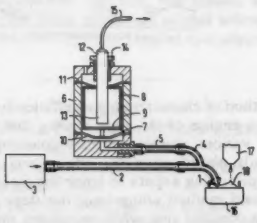
Alfred Heinzl, and Heinz Stadler, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 6, 1980, Ser. No. 194,570

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945341

Int. Cl.³ G01B *13/14*

U.S. Cl. 73—298 **7 Claims**



1. A device for scanning the level of liquid in a container comprising:

a scanning nozzle connected to a compressed air supply, said nozzle disposed above said container for directing air at a surface of said liquid in said container;

a housing having an interior chamber;

a piston contained in said chamber in contact-free fashion;

a means for supporting said piston in said chamber and for permitting displacement of said piston in said chamber;

a proximity switch disposed in said chamber a distance from a portion of said piston for emitting a signal when said distance is reduced by a pre-determined amount by displacement of said piston toward said switch; and

a pressure tube interconnected between said chamber of said housing and said nozzle for directing back pressure to said chamber when said liquid in said container reaches a pre-determined level, whereby said back pressure displaces said piston into contact with said proximity switch for actuation thereof.

4,364,271

OPTICAL REFRACTOMETER

Keith D. Froome, Hampton, England, assignor to National Research Development Corporation, London, England

Filed May 13, 1980, Ser. No. 149,558

Claims priority, application United Kingdom, May 31, 1979, 7918959

Int. Cl.³ G01W *1/02*; G01N *9/00*

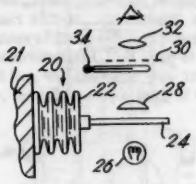
U.S. Cl. 73—432 R **10 Claims**

1. A terrestrial refractometer comprising:

a gastight enclosure of substantially invariant transverse section and having a linearly movable endwall which varies in position in accordance with ambient temperature and pressure, the enclosure containing a fixed mass of a gas which at least approximates to an ideal gas; and

sensing and compensating means comprising a non-linear scale fixed to the movable endwall so as to respond to

linear movement of the endwall, and an adjacent simple thermometer said thermometer being positioned with respect to said non-linear scale so that a level in said thermometer can act as a reference mark for reading said



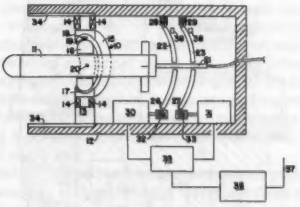
non-linear scale, whereby a compensating factor is derived which is proportional to the linear movement of the endwall from its position under conditions of standard temperature and pressure so that any resistance of the enclosure to movement of the endwall is compensated.

4,364,272

MULTI-POSITION ADJUSTABLE TEST FIXTURE

James A. Daniel, and George T. Pinson, both of Huntsville, Ala., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 1, 1980, Ser. No. 192,685
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—432 R **8 Claims**



1. A test fixture for selectively positioning a test article in space comprising:

a support for said article which permits limited angular movement of said article about a selected fixed point within said article, said support comprising a rotatable outer ring and a cooperating inner ring through which said article extends, the inner and outer rings having cooperating spherical surfaces which permit universal movement of the article about said fixed point;

a pair of spaced-apart positioning plates each rotatably mounted about a common axis;

at least one cam slot through each of said positioning plates;

positioning means for establishing instantaneous axial position of either of said positioning plates; and

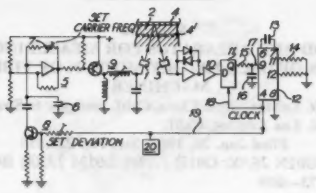
a drive stylus secured to said test article and extending through the cam slot of each of said positioning plates, whereby the disposition of said stylus and said article is established by the relative angular relation of the two positioning plates.

4,364,273

APPARATUS FOR LOCATING INTERFACES IN MEDIA

Robert J. Redding, September House, Cox Green La., Maidenhead, Berkshire, England (SL6 3EL)

Filed Oct. 9, 1980, Ser. No. 195,404
Claims priority, application United Kingdom, Feb. 15, 1980, 8005149
Int. Cl.³ G01N *29/04, 9/24;* G01F *23/00;* G01S *15/32*
U.S. Cl. 73—614 **9 Claims**



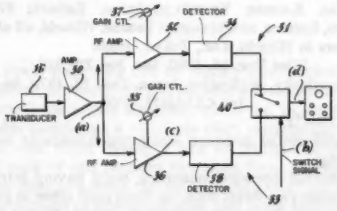
1. Apparatus to detect the presence of a sound-reflective inhomogeneity in a selected region of a medium, the apparatus comprising means to generate a frequency-modulated electrical signal; a first ultrasonic transducer; means to feed said electrical signal to said first transducer to cause said first transducer to transmit frequency-modulated ultrasonic energy into the medium along a direction which crosses near and far limits of said region; a second ultrasonic transducer to receive ultrasonic energy reflected from within said medium; means to monitor the phase of the modulation of said transmitted ultrasonic energy and the phase of the modulation of said received ultrasonic energy; means to adjust the modulation frequency of said ultrasonic energy to obtain a required relationship between said transmitted and received modulation phases, said modulation frequency lying between first and second limiting frequencies which correspond, respectively, to the positions of said near and far limits of said region relative to said transducers, whereby said required phase relationship is obtainable only for reflections from within said selected region; and means responsive to said modulation frequency to display information relating to the presence of said inhomogeneity.

4,364,274

ULTRASONIC INSPECTION WITH BACK ECHO MONITORING

Donald E. Sharpe, Woodbury, Conn., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Oct. 20, 1980, Ser. No. 198,764
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—615 **6 Claims**



1. In the method of examining a test object for internal flaws wherein ultrasonic pulses are transmitted into an entry surface of said object and echoes of said pulses from flaws and from a back surface of said object are detected, converted into corresponding electrical signals, and displayed, the improvement which comprises:

establishing a main branch circuit including a first level of

amplification for echo signals originating from flaws intermediate said entry and back surfaces;

establishing a back echo branch circuit including a second, lower, non-saturating level of amplification for echo signals originating from said back surface; and

selectively switching said electrical signals alternately through said main branch circuit and said back echo branch circuit to achieve useful amplification of flaw signals while avoiding amplifier saturation by back echo signals.

4,364,275

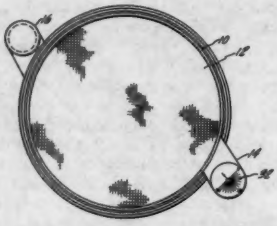
METHOD AND APPARATUS FOR MEASURING PHASE ANGLES OF OSCILLATORY MOTION OF VIBRATORY MACHINERY

Stephen R. LaMar, Santa Clara, Calif., assignor to Sweco, Incorporated, Los Angeles, Calif.

Filed Jan. 26, 1981, Ser. No. 228,210

Int. Cl.³ G01N *29/00*; G01H *11/00*; G01M *13/00*; B01F *15/00*

U.S. Cl. 73—649 **1 Claim**



1. A method for the measurement of the phase angle of vibratory motion of a mechanism having spaced eccentric weights on a vertical shaft while the mechanism is running, comprising the steps of

viewing line segments arranged in selected angles on a surface of the vibratory mechanism perpendicular to the vertical shaft from substantially an end-on position;

selecting the line segment the end of which appears to define a straight line from the substantially end-on position;

viewing the line segments from an upper side view aligned with the line defined by the selected line segment;

selecting the line segment appearing as having the thinnest cross-section as viewed from the upper side view.

4,364,276

DIFFERENTIAL PRESSURE MEASURING TRANSDUCER ASSEMBLY

Michitaka Shimazoe; Yoshitaka Matsuoka, both of Mito; Ryozo Akahane, Katsuta; Yasushi Shimizu, Katsuta; Hideyuki Nemoto, Katsuta, and Masanori Tanabe, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 217,023

Claims priority, application Japan, Dec. 19, 1979, 54-164128

Int. Cl.³ G01L *9/06*

U.S. Cl. 73—721 **11 Claims**

1. A differential pressure measuring transducer assembly comprising:

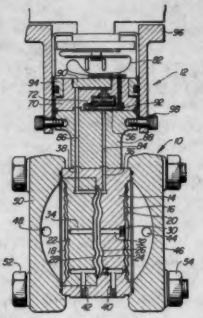
a differential pressure measuring body having introduced thereinto two fluids differing from each other in pressure;

a measuring diaphragm formed of semiconductor material including a center boss area of large thickness, a peripheral support flange of large thickness and an annular strain producing portion of small thickness defined between the center boss area and the peripheral support flange and having gauge resistance elements arranged thereon;

a glass support member attached to the peripheral support flange of the measuring diaphragm;

a metallic support member mounted between the glass support member and the differential pressure measuring body;

pressure conducting passage means communicating with the glass support member and the metallic support member; and



means for applying the two fluids introduced into the differential pressure measuring body differentially to different side surfaces of the measuring diaphragm.

4,364,277

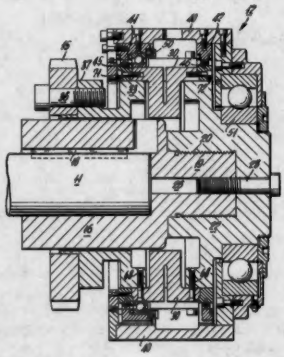
SENSITIVE HEAVY DUTY DYNAMIC TORQUE MEASUREMENT COUPLING UNIT AND METER

Herbert A. Rundell, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 21, 1980, Ser. No. 209,163

Int. Cl.³ G01L *3/14*

U.S. Cl. 73—862.34 **8 Claims**



1. A sensitive heavy duty dynamic torque measuring coupling unit for use in oil well drilling and the like, comprising

an annular torque transmitting unit,

said torque transmitting unit comprising (1) a pair of annular driving and driven torque transmitting means, and (2) a plurality of deflection elements for permitting relative angular displacement of said driving and driven torque transmitting means under load,

said deflection elements each comprising (a) a pair of radial parallel legs having rectangular cross-sectional shapes for bending under said load, (b) an axial integral connecting member forming a U-shaped structure and having rectangular cross-sectional shape for twisting under said load, and (c) circular segments integrally attached to the free ends of said U-shaped structure for attaching said deflec-

tion elements to said driving and driven torque transmitting means.

4,364,278

ASSEMBLY FOR MONITORING TORSIONAL LOADING OF A DRIVE SHAFT

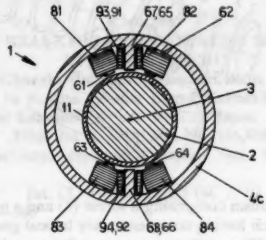
Hans-Dieter Horter, Friedrichshafen; Wolfgang Maier, Markdorf, and Herbert Seibold, Mariabrunn, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,022

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939566

Int. Cl.³ G01L 3/10

U.S. Cl. 73—862.36 **14 Claims**



1. An assembly for monitoring torsional loading of a drive shaft, said assembly comprising:

a cylindrical body of magnetostrictive material having a high magnetic permeability in an unstressed state of said body, said body being rigid with and substantially surrounding said shaft;

induction means juxtaposed at least in part with an outer surface of said body for generating a magnetic field therein;

insulating means for inhibiting the penetration of magnetic flux lines into said shaft from said body;

pick-up means including an electromagnetic sensor juxtaposed with said body for detecting distortions in said magnetic field due to torsional loading of said shaft and for generating an output signal containing information on the magnitude and direction of torsional loading of said shaft, said output signal including a high-frequency carrier waveform and a low-frequency modulating wveform having a polarity determined by the direction of loading of said shaft; and

a demodulator operatively connected to said pick-up means for extracting said modulating waveform from said carrier waveform, said body being formed with a slot, whereby said modulating waveform includes a pulsatile component whose frequency is equal to the rotation rate of said shaft.

4,364,279

SHEAR BEAM LOAD CELL SYSTEM

Harry Stera, and Charles Airesman, both of Cumberland, Md., assignors to Allegany Technology, Inc., Cumberland, Md.

Filed Dec. 31, 1980, Ser. No. 221,560

Int. Cl.³ G01L 1/22

U.S. Cl. 73—862.66 **13 Claims**

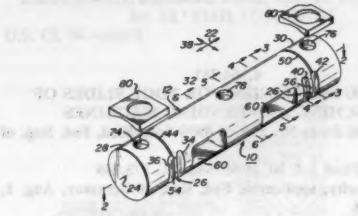
1. A shear beam load cell system comprising:

(a) a longitudinally extended beam member having a central axis;

(b) flexure isolation means formed on opposing longitudinal end sections of said beam member for minimizing stress changes in a central section of said beam member responsive to non-measurement loads applied to said beam member, said flexure isolation means including at least a pair of through passages formed through each of said opposing longitudinal sections of said beam member, said through passages extending in a transverse direction with respect to said beam longitudinal extension and at least a pair of slots passing through said beam member in a substantially vertical direction from an external surface of said beam member to a respective through passage;

(c) a plurality of strain gauge members fixedly secured to said central section of said beam member; and,

(d) web flexure means formed within said central section of said beam member for mounting said strain gauge members to said beam member, said web flexure means including a plurality of recesses extending transverse said longitudinal extension from opposing transverse surfaces of said beam member, said recesses defining at least a pair of wells substantially aligned in said transverse direction forming a longitudinally extending web member substantially coincident said central axis, said wells having a transversely directed center line vertically displaced from said beam central axis.



4,364,280

DOUBLE SHEAR BEAM STRAIN GAGE LOAD CELL

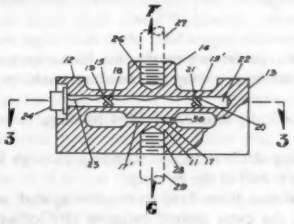
Ali U. Kutsay, 112 Union Hill Rd., West Conshohocken, Pa. 19428

Continuation of Ser. No. 37,231, May 8, 1979, Pat. No. 4,283,941. This application Jan. 9, 1981, Ser. No. 223,865

The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.

Int. Cl.³ G01L 1/22

U.S. Cl. 73—862.66 **1 Claim**



1. A strain gage load cell of unitary construction for the measurement of axial loads and capable of substantially resisting lateral loads which adversely affect the measurement of axial loads comprising a relatively thick rectangular block of material, said block having a pair of recesses in one edge thereof, each of said recesses extending from a point spaced from one edge to a point spaced from the center and forming a central element of substantial area, said block further including a pair of elongated slots extending through said block at points spaced from the first said recesses and substantially parallel therewith and a narrow elongated slot connecting said pair of slots, the last said slots forming a discrete central element supported by substantially uniform elongated rectangular shear beams formed by said recesses and said pair of slots, said block further including a central opening extending through each of said shear beams, pairs of strain gages mounted within

said opening in each shear beam and positioned centrally thereof, the gages of each pair being disposed at 90° one relative to the other and at 45° relative to the axis of the associated shear beam and means for applying an axial load to be measured between said central element and the opposing surface of said block.

4,364,281

DRIVING MECHANISM FOR TOOL SLIDES OF PUNCHING AND BENDING MACHINES

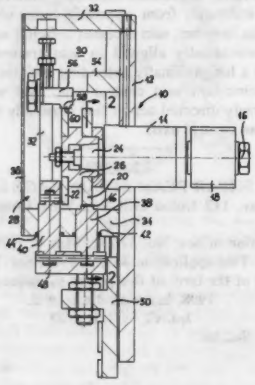
Adolf Wünsch, Haus Nr. 210, D-8959 Seeg-Ried, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,849

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931195

Int. Cl.³ F16H *25/14, 53/06*

U.S. Cl. 74—55 **4 Claims**



1. An improved driving mechanism for reciprocating tool slides of automatic punching and bending machines comprising:

(a) a hermetically sealed, oil-filled housing, fastened on a frame;

(b) a driving shaft sealingly extending through and journalled in a wall of the housing,

(c) a pair of cam plates fixed on the driving shaft within the housing, the cams thereof being in 180° offset position with respect to one another;

(d) a push rod sealingly extending through a bore provided in a second wall of the housing;

(e) a tie rod arrangement arranged in parallel relationship with the push rod within the housing and comprising a slide member and a tie rod connected therewith, the slide member sealingly extending through a second bore provided in said second wall of the housing;

(f) the push rod and the slide member being fastened to a tool slide slidably quided on the frame outside of the housing;

(g) the tie rod extending beyond the axis of the driving shaft;

(h) a cam follower adjustably fastened at the tie rod;

(i) the inner end of the push rod provided with a convex end face; and

(j) each of the cam follower of the tie rod arrangement and the push rod being held in contact with different cam plates.

4,364,282

SCREW AND NUT MECHANISM

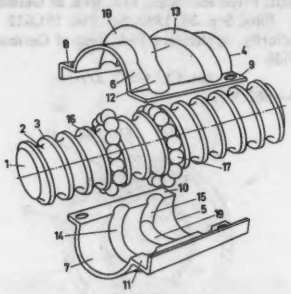
Sven W. Nilsson, Partille, Sweden, assignor to SKF Nova AB, Goteberg, Sweden

Filed Aug. 26, 1980, Ser. No. 181,462

Claims priority, application Sweden, Sep. 13, 1979, 7607609

Int. Cl.³ F16N *11/18*

U.S. Cl. 74—424.8 A **5 Claims**



2. A mechanism comprising a screw (1) and a nut enclosing the screw, each having complementary helical grooves (2, 12, 13, 14, 15, 18, 19) constituting raceways for a number of rolling bodies (16, 17) circulating in a closed loop, the nut being made from two sheet metal halves, each half having a cylindrical portion (6, 7) provided with grooves and enclosing about 180° of the screw and surrounded by portions (8, 9, 10, 11) by which the halves are connected to each other, characterized by a portion of the groove in at least one cylindrical portion integrally contained therein (18, 19) being an enlarged recess proximate the main portion of the screw and adjacent said grooves of the screw and of a pitch opposite to that of the rest of the groove, said rolling bodies being unloaded in said enlarged recess to permit return over a ridge (3) between two adjacent turns of the groove in the screw whereby the closed loop of the rolling bodies define one turn around the screw.

4,364,283

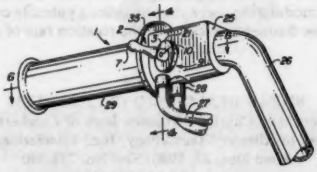
THROTTLE CONTROL

George L. Ricardo, 3319 Clarke Blvd., Shreveport, La. 71109

Filed Nov. 3, 1980, Ser. No. 203,051

Int. Cl.³ G05G *1/08, 5/16*

U.S. Cl. 74—489 **10 Claims**



1. A throttle control for motorcycles and similar vehicles having a cable drum comprising:

(a) a generally cylindrically-shaped cam lever body, an aperture and a counter-bore extending through the longitudinal center of said cam lever body, and a slot in one end of said cam lever body, said slot defining a pair of oppositely disposed flanges;

(b) bias means fitted in said counter-bore of said cam lever body and plunger means cooperating with said bias means and extending through said aperture and said counter-bore

of said cam lever body, with one end of said plunger means projecting from said aperture through said counterbore into said slot and the opposite end of said plunger means projecting from said cam lever body into selective contact with the cable drum; and

(c) a cam lever having a cam lever base, said cam lever base in registration with said slot and pivotally carried by said flanges of said cam lever body for selectively effecting contact between said cam lever base and the end of said plunger means projecting into said slot, and displacing said plunger means in said aperture in said cam lever body and selectively against the cable drum responsive to manipulation of said cam lever from a position substantially transverse to said cam lever body to a position in alignment with said cam lever body.

4,364,284

PARKING BRAKE RELEASING SYSTEM WITH CABLE ATTACHING BUSH

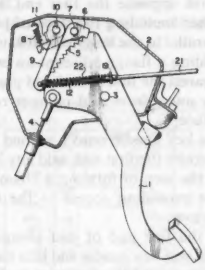
Akira Tani, Okazaki, and Takeo Yamazaki, Anjo, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha, both of, Japan

Filed Jul. 8, 1980, Ser. No. 166,905

Claims priority, application Japan, Sep. 17, 1979, 54-129094[U]

Int. Cl.³ G05G 5/06; F16C 1/10

U.S. Cl. 74—540 **4 Claims**



1. In a foot operated parking brake, comprising:

a pivoted brake pedal formed with a ratchet plate portion and biased in a rotational direction to release braking action;

a pivoted pawl, rotatably biased in a direction to engage with the ratchet plate portion so as to prevent the brake pedal from moving in said brake releasing direction;

and a pivoted release lever assembly formed with an engaging projection, rotational movement of said release lever assembly in a release direction bringing the engaging projection to bear against the pawl so as to impel it in a rotational direction opposite to said direction to engage the ratchet plate portion said release lever assembly having a slot located at a position remote from the pivoted thereof;

a releasing system, comprising:

a synthetic resin bush having a constriction in its outer surface and mounted to said slotted part of the release lever assembly with said constriction engaged in said slot, said bush also having a through hole whose middle portion is narrower than its opened outwardly facing end portions with tapered trumpet shaped walls;

a release cable, one end of which passes through said through hole in said bush;

and a stop member coupled to the end of said release cable which is substantially ball shaped on its side facing one end of said through hole in said bush, and which is larger than said through hole in said bush thus preventing the end of the release cable form coming out of said through hole;

the arrangement being such that pulling of the release cable engages said ball shaped part of said stop member with said bush so as to impel said release lever assembly in said release direction.

4,364,285

AUTOMATIC TRANSMISSION

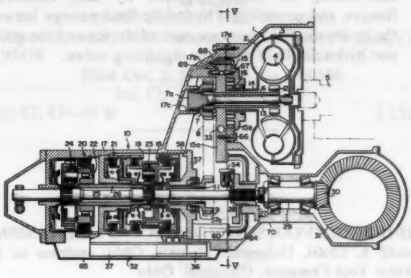
Kunio Morisawa, and Tatsuo Kyushima, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Jun. 11, 1980, Ser. No. 158,518

Claims priority, application Japan, Jun. 25, 1979, 54-79822

Int. Cl.³ F16H 57/02, 37/08

U.S. Cl. 74—606 R **4 Claims**



1. An automatic transmission for an automobile with an engine, comprising:

a transmission casing:

a transaxle casing:

the transmission casing and the transaxle casing being formed with connecting flanges with matching faces which abut together, and being joined together by means of these connecting flanges;

a fluid torque converter, mounted in the transaxle casing, comprising a power input shaft on its one side and a power output shaft on its other side, the input shaft being adapted for connection to the engine;

a hydraulic fluid pressure supply pump, comprising a hollow power input shaft which is directly connected to the power input shaft of the fluid torque converter and which extends coaxially with the power output shaft of the fluid torque converter which passes through its central hole, the pump being mounted to the transmission casing and being opposed to the transaxle casing;

a differential gear mechanism comprising a power input shaft extending with its axis generally parallel to the axis of the fluid torque converter, the differential mechanism being located in the transaxle housing generally in parallel with the fluid torque converter;

a gear transmission mechanism, mounted in the transmission casing, comprising coaxially arranged power input and power output shafts, and a plurality of hydraulic pressure operated servo devices, the gear transmission mechanism being shiftable between various speed stages according to selective supply of control hydraulic fluid pressure to the hydraulic fluid pressure operated servo devices, the power output shaft of the gear transmission mechanism being drivingly connected to and coaxial with the power input shaft of the differential gear mechanism;

an endless chain power transmission mechanism which drivingly connects the power input shaft of the gear transmission mechanism to the power output shaft of the fluid torque converter;

and a hydraulic fluid pressure control device, mounted in the transmission casing, which controls supply of control hydraulic fluid pressure to the hydraulic fluid pressure operated servo devices;

a governor hydraulic fluid pressure regulating valve rotatably mounted to the transaxle casing, a first hydraulic fluid port formed in the mating surface of the connecting flange of the transmission casing, the first hydraulic fluid port communicating with the hydraulic fluid pressure control device, and a second hydraulic fluid port formed in the mating surface of the connecting flange of the transaxle casing, the second hydraulic fluid port being connected to the governor hydraulic fluid pressure regulating valve;

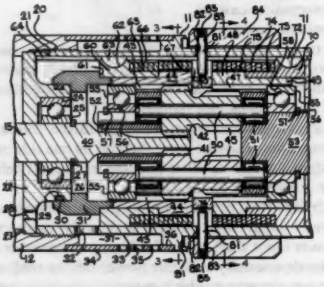
the first and second hydraulic fluid ports corresponding to one another, when the transmission casing and the transaxle casing are joined together by their connecting flanges, and providing a hydraulic fluid passage between the hydraulic fluid pressure control device and the governor hydraulic fluid pressure regulating valve.

4,364,286

BI-DIRECTIONAL SPEED REDUCING MECHANISM

Donald A. Ciolli, University Heights, Ohio, assignor to The Rotor Tool Company, Cleveland, Ohio

Filed Feb. 15, 1980, Ser. No. 122,080
Int. Cl.³ F16H *5/10, 57/10*
U.S. Cl. 74—768 **5 Claims**



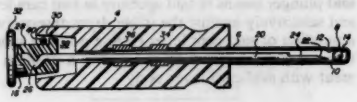
1. A bi-directional speed reducing mechanism comprising a housing having a first and second fixed supports therein, a rotatable input shaft, a rotatable output member, a first epicyclic gear train contained in said housing selectively operative to transmit the rotation of the input shaft to the output member in the same rotational direction at reduced speed and increased torque, a second epicyclic gear train contained in said housing selectively operative to transmit the rotation of the input shaft to the output member in an opposite rotational direction at reduced speed and increased torque, and means selectively operative to engage either the first or second epicyclic gear train for operating the output member in the selected directional mode, said means to engage including first and second wrap springs of same hand each having a first portion of a first inner diameter and a second portion of a second larger inner diameter, with the diameter transition between the first and second portions being effected in less than one spring wrap, said first spring portion of each said first and second wrap spring being respectively secured to said first and second fixed supports in said housing, and an actuator alternately to effect a diametrical decrease in one of said second spring portions for engagement while effecting a diametrical increase in the other second spring portion to release engagement.

4,364,287

METHOD FOR MAKING A KEY FOR DRIVING TAMPER-PROOF BOLT

John R. Heckrotte, Sr., Phoenix, Ariz., assignor to Cactus Technology Corp., Phoenix, Ariz.

Division of Ser. No. 101,821, Dec. 10, 1979, Pat. No. 4,291,599. This application Apr. 13, 1981, Ser. No. 253,696
Int. Cl.³ B21K *5/00*
U.S. Cl. 76—101 D **4 Claims**



1. A method of constructing a key for driving tamper-proof bolts, the key including a tubular sleeve having a transverse aperture at a first end thereof and an outer surface, a plunger rod axially slidable within said tubular sleeve, said plunger rod having a camming surface at a first end thereof and having a longitudinal axis, and ball means captively held by said tubular sleeve adjacent the transverse aperture, said ball means being cammed into the aperture in said tubular sleeve by the camming surface upon axial movement of said plunger rod, said method comprising the steps of:

a. molding a plunger handle onto a second end of said plunger rod opposite the first end, said plunger handle molding step including the steps of providing a flattened surface parallel to the longitudinal axis of said plunger rod and providing a flange adjacent an edge of the flattened surface nearest the first end of said plunger rod, the flange projecting away from said plunger rod beyond the flattened surface;

b. molding a key handle onto a second end of said tubular sleeve opposite the first end, said key handle molding step including the step of forming a chamber within said key handle for providing access to the second end of said tubular sleeve;

c. inserting the first end of said plunger rod through the chamber of said key handle and into the second end of said tubular sleeve until the flattened surface of said plunger handle has entered the chamber in said key handle; and

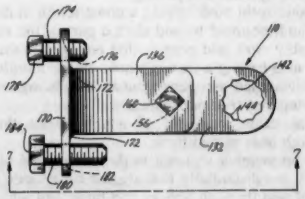
d. inserting a pin transversely through the chamber of said key handle parallel with and adjacent to the flattened surface of said plunger handle for preventing said plunger handle from rotating within the chamber of said key handle and for retaining the flange of said plunger handle within the chamber of said key handle.

4,364,288

CAMBER ADJUSTMENT ADAPTER

John H. Castoe, 10234 McVine St., Sunland, Calif. 91040

Continuation-in-part of Ser. No. 99,920, Dec. 3, 1979, abandoned. This application Jan. 9, 1981, Ser. No. 223,716
Int. Cl.³ B25B *23/02*
U.S. Cl. 81—3 R **17 Claims**



1. An adapter for use in torquing a camber bolt installed in a housing of a strut assembly in a vehicle suspension system, the housing having a pair of opposed first and second faces in

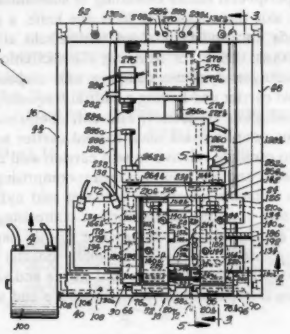
which the camber bolt has a head adjacent the first face of the housing and torque nut is secured to an end of the camber bolt adjacent the second face of the housing, so the torque nut can be tightened to torque the camber bolt, the adapter comprising a generally U-shaped bracket having opposed first and second legs and a bight portion for extending around a side of the housing so the first and second legs can overlie the first and second faces of the housing; a bore extending through the first leg of the bracket, the bore having an interior surface for being releasably secured to the head of the camber bolt; a fastener on the second leg for being rotated relative to the second leg for tightening the fastener against the second face of the housing to hold the first leg in a fixed position with the bore being locked around the head of the camber bolt to prevent rotation of the camber bolt while the torque nut is tightened to torque the camber bolt, the second leg being shorter than the first leg so the axis of the fastener is spaced inwardly closer to the bight portion of the bracket than the axis of the bore in the first leg for providing access to the torque nut adjacent the end of the second leg of the bracket; and at least one adjustable stabilizing fastener on the bight portion of the U-shaped bracket for being moved toward the U formed by the bracket for tightening the bracket around the housing.

4,364,289

WIRE STRIPPER APPARATUS

Ronald J. Sorensen, Richmond, Ind., assignor to Belden Corporation, Geneva, Ill.

Filed Mar. 20, 1980, Ser. No. 131,919
Int. Cl.³ H02G *1/12*
U.S. Cl. 81—9.51 **20 Claims**



1. Apparatus for stripping a coaxial outer layer of insulation or jacket material from an electrical conductor wire or cable comprising, in combination:

a base defining a longitudinal axis,

clamping means including a pair of clamping jaws supported by said base and operable between relative open positions enabling positioning of a conductor wire therebetween and closed positions clamping said conductor wire therebetween,

carriage means supported by said base for movement along a predetermined path of travel,

stripper means carried by said carriage means and including a pair of mutually cooperable stripping blades, blade holder means supporting said stripper blades for movement between relative open positions adapted to receive said conductor wire therebetween and closed positions adapted to sever the coaxial layer a predetermined radial depth,

actuator means supported by said base and cooperative with said carriage means to effect selective movement of said stripping blades when in their said closed positions to sever the insulation layer of the conductor wire disposed therebetween and move said severed insulation layer longitudinally of said conductor wire,

and stop means carried by said actuator means and defining a reference surface against which an end of the conductor wire may be placed preparatory to trimming and stripping thereof,

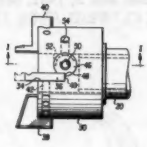
said actuator means including means adapted to effect pretravel of said stop means prior to movement of said carriage means in a direction to move said severed insulation layer so as to effect release of any severed insulation slugs lodged between said stripper blades and said stop means.

4,364,290

ADJUSTABLE TOOL HOLDER

William H. Astle, 2380 LaLoma Dr., Rancho Cordova, Calif. 95670

Filed Dec. 5, 1980, Ser. No. 213,685
Int. Cl.³ B23B *27/00, 5/16*
U.S. Cl. 82—36 R **4 Claims**



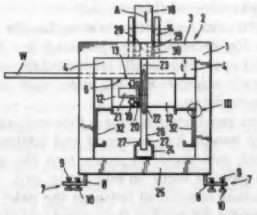
1. In a rotary cutting tool holder including a tool support rotatable about an axis and having axially separated proximal and distal ends, at least one axial opening for receiving a cutting tool bit that extends from the distal end of the support when received in said opening, a releasable lock for securing a tool bit to the holder in the opening, and a rotatable cam element mounted on the tool support for adjustably axially positioning the tool on the tool support with the cam rotational axis oriented generally radially of the tool support, the improvement comprising, said cam having only a single peripheral edge feature extending laterally into the axial opening adjacent its proximal end to form an abutment that is substantially axially movable within the axial opening by rotation of the cam, and means for securing the cam against rotation.

4,364,291

FRAME FOR A RECIPROCABLE CIRCULAR SAW

Erwin Jenkner, Lindenstrasse 13, D-7261 Gechingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 62,406, Jul. 31, 1979, abandoned. This application May 13, 1981, Ser. No. 263,118
Claims priority, application Switzerland, Jul. 31, 1978, 8178/78
Int. Cl.³ B23D *47/02*
U.S. Cl. 83—100 **10 Claims**



1. In a reciprocable circular saw for treating at least one workpiece, a frame comprising a plurality of spaced-apart legs

including upper portions having flat coplanar surfaces on the undersides thereof and vertically extending side portions connected to and supporting said upper portions, elongated carrier means extending longitudinally between and secured to said legs, said carrier means having at least one upper finished surface which abuts against said flat coplanar surfaces and constitutes the surface of a table for positioning said workpiece, and a saw, a portion of which is mounted in said carrier means for longitudinal movement along said carrier means to treat said workpiece.

8. A frame according to claim 1, further comprising a suction channel for shavings, said channel being mounted on said legs.

4,364,292

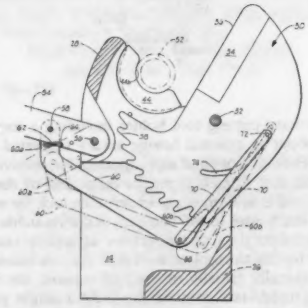
FLOOR OR BENCH MOUNTED CONDUIT CUTTING DEVICE

Glenn A. Wozniak, Chagrin Falls; Robert R. Rady, Strongsville, and Harold T. Pate, Solon, all of Ohio, assignors to Indian Head Inc., New York, N.Y.

Division of Ser. No. 16,507, Mar. 1, 1979, Pat. No. 4,300,425. This application Jan. 5, 1981, Ser. No. 222,294

Int. Cl.³ B23D *17/08, 21/06*

U.S. Cl. 83—605 **3 Claims**



1. Apparatus for transversely shearing cylindrical plastic tubing comprising:

a blade element having a cutting edge and pivotally mounted for partial rotation about a pivotal axis and in a plane extending normal to the longitudinal axis of the tubing, said blade element having a plurality of adjacent teeth secured to an edge thereof other than said cutting edge;

a base;

means pivotally supporting the blade element on the base;

tubing holding means detachably mounted on said blade element supporting means and including arcuate surfaces for directly engaging and supporting at contact areas spaced axially from each other along the tubing, a tubing to be cut over substantially 180° of the outer surface of the tubing;

an operating handle movably supported over said base and pivotally connected thereto; and

means interconnecting the operating handle and the blade element for incrementally pivoting the blade element when said operating handle is pivoted through a predetermined path relative to said base, said interconnecting means comprising:

an elongated pawl lever having a first end connected to the operating handle and a second end adapted for engagement with said teeth by entry into the space between adjacent pairs of teeth on said blade; and

indexing means connected between the pawl lever and the blade element for guiding the second end of the pawl lever to positions of engagement with consecutive teeth upon each repetition of the movement of said operating handle through said predetermined path, and for retracting said blade element after a conduit has been cut through by the blade element and thereby restore the blade element to its original operative position.

4,364,293

ROTARY KNIFE HOLDER WITH MEANS FOR DAMPING ITS NATURAL FREQUENCY OSCILLATIONS

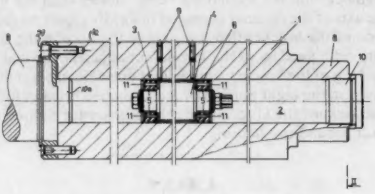
Gerhard Hirsch, Aachen, Fed. Rep. of Germany, assignor to E. C. H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed May 22, 1980, Ser. No. 152,185

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1979, 2923516

Int. Cl.³ B26D *1/56*

U.S. Cl. 83—674 **6 Claims**



1. A knife holder, particularly for use in apparatus for subdividing a running web of paper or the like into discrete sheets, comprising a hollow rotary carrier which tends to oscillate at a given natural frequency, said carrier having an axial passage, at least one peripheral recess extending in substantial parallelism with the axis thereof, and at least one knife, a portion of which extends into and is retained within said at least one peripheral recess; means for damping the oscillations of said carrier, including a dynamic damping unit disposed in the passage of said carrier and having a natural frequency which is attuned to said given frequency, said unit comprising a mass and means for coupling said mass to said carrier so that the mass is free to oscillate relative to said carrier, said mass comprising a cylinder and said coupling means comprising a plurality of elastic elements interposed between said cylinder and said carrier, said coupling means further comprising a sleeve coaxial with and installed in the interior of said carrier, said cylinder being installed in, being normally coaxial with and being freely oscillatable relative to said sleeve and said elastic elements being interposed between said sleeve and said cylinder.

4,364,294

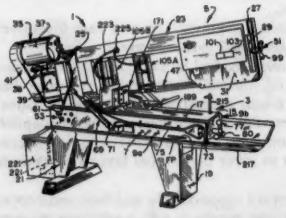
HORIZONTAL POWER BAND SAW

Curtis J. Eccardt, St. Charles, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 4, 1980, Ser. No. 175,253

Int. Cl.³ B23D *53/04, 55/04, 55/10, 55/08*; B27B *13/10*

U.S. Cl. 83—796 **24 Claims**



1. In a horizontal power band saw for cutting metal or the

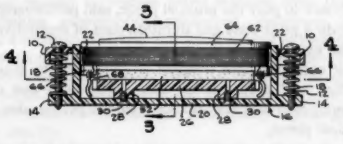
like comprising a frame including a bed, legs supporting said bed, and a head assembly pivotally carried by said bed at one end thereof for swinging in a generally vertical direction between a raised position and a lowered position, said head including a pair of spaced blade wheels rotatably mounted thereon, an endless blade entrained around said blade wheels, said blade having a cutting surface thereon, and means for driving said blade around said blade wheels, wherein the improvement comprises: said bed being a bed weldment constituted by a pair of elongate, generally parallel, spaced, horizontal bed members extending the length of said bed, each of said bed members being a channel member having a generally vertical web and a horizontal flange at the top and bottom of said web, said head comprising a head weldment having a head post and a head beam generally perpendicular to the head post, said head beam carrying said blade wheels, said head post extending down between said spaced bed members, said bed members being spaced apart a distance sufficient to receive the lower end of said head post therebetween, and means for pivotally mounting said head post relative to said bed members for rotation of the head about a horizontal axis between its raised and lowered positions, said means for mounting said head post relative to said bed members comprising a pair of horizontal, coaxial trunnions projecting outwardly from the head post on opposite sides thereof, the axis of said trunnions constituting a horizontal pivot axis for the head, and a pair of bearing housings, one for each trunnion, adjustably securable to the inner face of the web of said bed members for journalling said trunnions therein, each said bearing housing being adjustably movable within a limited range relative to its respective said bed member for adjusting said axis of said trunions thereby to properly orient said head relative to said bed.

4,364,295

MUSICAL INSTRUMENT SOUND PICKUP AND METHOD OF ASSEMBLY THEREOF

Willi L. Stich, c/o Lawrence Sound Research #1 Industrial Dr., Mt. Juliet, Tenn. 37122

Filed Mar. 2, 1981, Ser. No. 239,242
Int. Cl.³ G10H *3/18*
U.S. Cl. 84—1.15 **19 Claims**



1. A sound pickup for a stringed musical instrument comprising:

a hollow housing having a top opening and a bottom bed plate;

a base plate positioned in said hollow housing on said bed plate and including first and second parallel elongated apertures;

first and second elongated coil core blades respectively having one edge matingly and snugly fitted into said first and second parallel elongated apertures for retention therein and having a second opposite edge positioned outwardly of said top opening of said hollow housing;

elongated magnet means positioned on said base plate between said first and second elongated coil core blades;

first and second elongated coil assemblies respectively matingly fitted over said first and second elongated coil core blades with each coil assembly partially overlying said elongated magnet means;

holding means for retaining said base plate in fixed position in said hollow housing; and

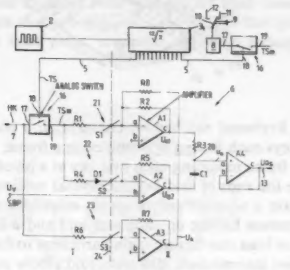
conductor means extending from said elongated coil assemblies through said housing.

4,364,296

ELECTRICAL MUSICAL INSTRUMENT

Reinhard Franz, Tulpenstrasse 15, D-5401 Emmelshausen, Fed. Rep. of Germany, and Wilfried Dittmar, Halsenbach, Fed. Rep. of Germany, assignors to Reinhard Franz, Emmelshausen, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,236
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006453
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.26 **19 Claims**



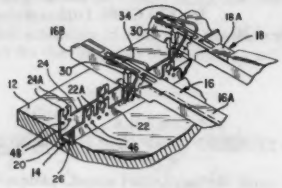
1. In an electronic musical instrument, the combination of first generator means for supplying tone signals; key means actuable to generate additional signals of variable duration; second generator means for supplying envelope control signals whose intensity is a function of the duration of the additional signals; and control means for modulating the amplitude of the tone signals as a function of the characteristics of the envelope control signals, said control means including terminal means, and analog switch means having a first input for the envelope control signals, a second input for the tone signals and an output for modulated tone signals connected with said terminal means, said control means further including a bypass branch between said second generator means and said terminal means bypassing said analog switch means, and said bypass branch comprising means for superimposing upon the modulated tone signals further signals whose magnitude is half that of the modulated tone signals, said superimposing means including an amplifier which constitutes an inverter and is operative to reduce the magnitudes of signals supplied thereto.

3. In an electronic musical instrument, the combination of first generator means for supplying tone signals; key means actuable to generate additional signals of variable duration; second generator means for supplying envelope control signals whose intensity is a function of the duration of the additional signals; and control means for modulating the amplitude of the tone signals as a function of the characteristics of the envelope control signals, said control means including analog switch means having a first input for the envelope control signals, a second input for the tone signals and an output for modulated tone signals, and said control means further including a terminal, and a first main branch connecting said output with said terminal to transmit modulated tone signals to said terminal, said control means also including a second main branch connecting said output with said terminal, and said second main branch comprising means for transmitting modulated signals from said output to said terminal when the amplitude of the modulated tone signals exceeds a predetermined value, said transmitting means including a high-pass filter.

4,364,297
KEYBOARD SPRING RETURN MECHANISM

James Meier, Des Plaines, Ill., assignor to Norlin Industries, Inc., White Plains, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,562
Int. Cl.[3] G10C 3/12
U.S. Cl. 84—440 14 Claims

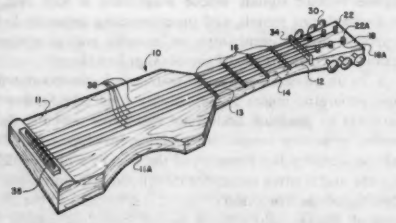


1. A keyboard mechanism comprising: a plurality of elongated keys each having opposite ends; a frame; fulcrum means on said frame mounting each said key at a pivot location intermediate the ends of said key for pivotal motion about a transverse axis; a separate return spring means for each key, each spring means having an anchored end and a biasing end and having at least one flexure spring arm bent to form an elbow at a location intermediate said ends, said elbow normally having a predetermined angle; anchoring means on said frame restraining an anchored end of each said spring means at an anchoring location intermediate the ends of the corresponding key; trapping means on each said key engaging the biasing end of the corresponding spring means at a biasing location intermediate the ends of said key; said biasing location and said pivot location being offset from each other longitudinally of said key; and each said spring means being stressed between said anchoring location and said biasing location, forcing said elbow to form an angle greater than said predetermined angle, when the corresponding key is pivoted in one direction about said fulcrum means, so as to exert a biasing torque upon said key tending to return it to its initial position.

4,364,298
STRINGED SIMULATOR

Gary L. Piazza, 2156 Medfield Trail, NE., Atlanta, Ga. 30345

Filed Aug. 24, 1981, Ser. No. 295,832
Int. Cl.[3] G09B 15/06
U.S. Cl. 84—465 10 Claims



1. A stringed simulator which is portable, compact and produces low sound levels for enabling a player to practice both right hand plucking and left hand fingering which closely simulates practice on a corresponding full-size stringed instrument, said stringed simulator comprising:

(a) a non-acoustic body having peripheral dimensions substantially smaller than a corresponding full-size instrument;

(b) an elongate neck carried by and projecting laterally outwardly from one side of said body said neck having a flat top surface and being substantially shorter in length than, but having the same width, thickness and contour as the neck of a corresponding full-size instrument;

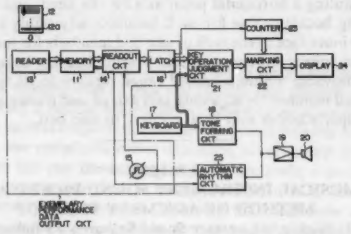
(c) means positioned adjacent the free end of said neck and adjacent the periphery of said body remote from said neck for tensioning a plurality of strings therebetween; and

(d) a plurality of frets corresponding to a portion of the fretboard of said full size instrument, said frets being positioned on and spaced along the top surface of said neck at intervals from each other corresponding to the fret intervals of said portion.

4,364,299
ELECTRONIC MUSICAL INSTRUMENT HAVING SYSTEM FOR JUDGING PLAYER'S PERFORMANCE

Akira Nakada; Eisaku Okamoto, and Kiyoshi Yoshida, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Filed Dec. 18, 1980, Ser. No. 217,896
Claims priority, application Japan, Dec. 27, 1979, 54/171404
Int. Cl.[3] G09B 15/02, 15/04
U.S. Cl. 84—478 11 Claims



1. An electronic musical instrument comprising:

memory means for storing exemplary performance data representative of progression of notes of a musical piece and corresponding to key operations to be effected on a keyboard to play the musical piece, said performance data including pitch data and duration data of respective notes of the music;

readout control means coupled to said memory means for reading said performance data sequentially out of said memory means in accordance with the progression of the musical piece;

keyboard means responsive to key operations to produce musical performance signals corresponding to musical notes; and

key operation judging circuit means coupled to said keyboard means for comparing said musical performance signals produced by said keyboard means with said performance data read out of said memory means to detect whether or not each of said key operations is correctly effected on said keyboard means in accordance with the respective performance data read out of said memory means;

said readout control means including means for reading performance data corresponding to a note out of said memory means after the elapse of a period of time corresponding to the duration data of a preceding note from the readout of performance data of said preceding note; and

said key operation judging circuit means including means for effecting a comparison between a time interval corresponding to the duration data of a given note and a time interval beginning from the time of a key depression operation corresponding to said given note to a succeeding key releases operation on said keyboard means.

4,364,300

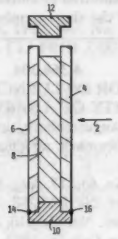
COMPOSITE CORED COMBAT VEHICLE ARMOR

Victor H. Pagano, Rochester, and John M. Hennessey, Warren, both of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 918,988, Jun. 26, 1978, abandoned. This application Mar. 31, 1980, Ser. No. 136,124

Int. Cl.³ F41H 5/04

U.S. Cl. 89—36 A 1 Claim



1. A composite cored armor plate for military combat vehicles to resist penetration by high velocity armor piercing projectiles, said armor comprising:

(a) a composite of a first, second and third laminations of different densities, of which at least the first and second laminations are of at least equal masses, said first lamination having a surface directly exposed to potential armor piercing projectile attack;

(b) said first lamination consisting of a relatively thin quenched and tempered alloy steel plate having a relatively high density and BHN hardness to confront said armor piercing projectile with a high density bulk for a relatively short travel path so as to induce projectile cracking and impair projectile integrity; the BHN hardness being in the 500–600 range;

(c) the second lamination being immediately adjacent said first lamination, and being of a relatively low density high strength nonferrous metallic material; its density being of from one-sixth to two-thirds that of the first lamination;

(d) said second lamination being selected from the group including graphite-fiber-reinforced aluminum material and a titanium material, and while having at least the same mass as said first lamination has a much greater thickness than the first lamination, thereby forcing the projectile to do more work to traverse and to potentially penetrate its much greater bulk while simultaneously reducing projectile energy;

(e) the third lamination being spaced apart from said first lamination but immediately adjacent the second lamination; said third lamination having lesser BHN hardness than the first lamination and substantially greater hardness than the second lamination; and

(f) said third lamination consisting of a relatively thin, high toughness, quenched and tempered alloy steel plate having a BHN hardness of approximately 300 so as to substantially arrest such velocity as the projectile and fragments might still possess.

4,364,301

VACUUM ACTUATOR

Yasuhiro Kawabata, Anjo, and Kongo Aoki, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Sep. 11, 1980, Ser. No. 186,160

Claims priority, application Japan, Sep. 21, 1979, 54-122360

Int. Cl.³ F15B 15/22

U.S. Cl. 91—20 6 Claims

1. A vacuum actuator for connection to a vacuum source, said actuator comprising:

a housing;

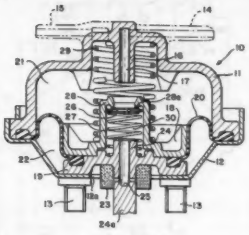
annular diaphragm means dividing the interior of the housing into first and second fluid chambers, said diaphragm means being biased into a first stable position wherein a portion of the diaphragm means abuts the housing;

first and second inlet ports formed in said first chamber for individual communication either with the vacuum source or with atmospheric pressure;

passage means independent of said first and second ports for continuously communicating atmospheric pressure to said second fluid chamber;

poppet valve means for terminating communication between said first inlet port and said first fluid chamber in response to upward movement of said diaphragm means and for controlling communication of atmospheric pressure to said first fluid chamber from said second fluid chamber;

said diaphragm means being stabilized in said first position when both inlet ports communicate with atmospheric



pressure, in a second position when said first inlet port communicates with said vacuum source, said second inlet port is disconnected from fluid communication with said first fluid chamber and said poppet valve closes fluid communication between said first inlet port and said first fluid chamber, and in a third position when fluid communication between said first inlet port and said first fluid chamber continues to be terminated, vacuum is applied to said second inlet port, and said poppet valve means closes off communication of atmospheric pressure between said second fluid chamber and said first fluid chamber in response to maximum upward movement of said diaphragm means, said poppet valve means admitting atmospheric pressure to said first fluid chamber from said second fluid chamber between said second and third stable positions of said diaphragm means.

4,364,302

HYDRAULIC CONTROL APPARATUS FOR A SERVO-MOTOR, PARTICULARLY FOR VEHICLE STEERING

Svend E. Thomsen, and Thorkild Christensen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Aug. 14, 1980, Ser. No. 178,146

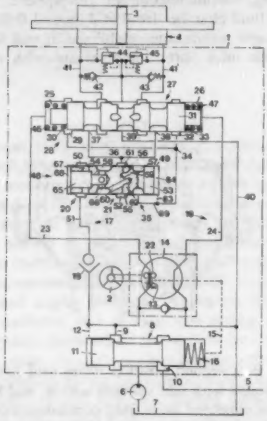
Claims priority, application Denmark, Aug. 14, 1979, 2932847

Int. Cl.³ F15B 13/042

U.S. Cl. 91—29 1 Claim

1. A hydraulic steering control assembly, comprising, a bidirectional servomotor having two operating ports on opposite sides thereof, a pump and a tank, operable steering control means, a metering control controlled by said steering control means having input and output ports and left and right control ports to which pressurized fluid may be selectively directed from said input port and returned from the other said control ports to said output port, bidirectional valve means having inlet port means and directional power control ports connected to said servomotor ports for selectively supplying and exhausting pressurized fluid therefrom, said bidirectional valve means having left turn inlet and outlet control ports and right turn inlet and outlet control ports a two sided control circuit connected to said metering unit control ports and to said bidi-

rectional valve means right and left turn inlet control ports, utility valve means having pressure regulating and control and power valve capabilities, said utility valve means having a single slidable spool disposed in a valve housing having first and second input passage means and output passage means, said spool and said housing forming first and second chambers at opposite ends thereof, a power circuit connected to said pump and to said utility valve means first input passage means, said spool having a first internal passage means having fluid communication with said first chamber and being in an adjustable throttling relationship with said first housing input passage means to regulate the pressure of fluid at said first housing



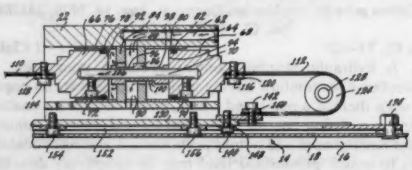
input passage means, said bidirectional valve means left and right turn outlet control ports being selectively connected via said metering control unit to said second utility valve means chamber and to said valve housing second input passage means, said spool having second internal passage means in constant fluid communication with said first internal passage means thereof and said housing second input passage means and said valve housing output passage means to combine pressure fluids from said control and power circuits, said valve output passage means being connected to said bidirectional valve means inlet port means to provide a common path for pressurized fluids from said power and control circuits.

4,364,303

AIR OPERATED RECIPROCATING TOOL

Kunio A. Sumida, 1114 N. Kenter Ave., Los Angeles, Calif. 90049

Filed Sep. 8, 1980, Ser. No. 184,928
Int. Cl.³ F01L *23/00*; F01B *9/00*
U.S. Cl. 91—329 **21 Claims**



1. An air operated reciprocating tool, including,

an air operated double ended piston positioned within a cylinder for automatic continuous reciprocation within the cylinder,

a valve assembly operatively actuated by the piston and in communication with a source of air for automatically alternating the control of the application of the source of air to opposite portions of the piston for producing automatic continuous reciprocation of the piston,

a shoe member for supporting a tool and with the shoe member mounted for sliding motion, and

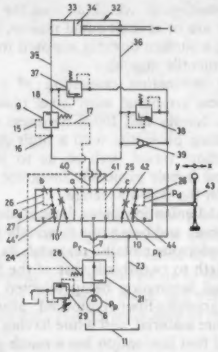
belt means forming a loop for interconnecting the ends of the double ended piston and the shoe member and with the belt means supported by pulley members located adjacent the ends of the double ended piston and with the automatic continuous reciprocating motion of the double ended piston transmitted to automatic continuous reciprocating motion of the shoe member.

4,364,304

ARRANGEMENT FOR INFLUENCING THE OPERATING QUANTITY OF A SERVOMOTOR

Hans S. Andersen, Augustenborg, and Preben Christiansen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 63,517, Aug. 3, 1979, abandoned, which is a continuation of Ser. No. 883,288, Mar. 3, 1978, abandoned, which is a division of Ser. No. 758,613, Jan. 12, 1977, abandoned.
This application Oct. 26, 1981, Ser. No. 314,763
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1976, 2601999
Int. Cl.³ F15B *13/04*
U.S. Cl. 91—420 **1 Claim**



1. A servomotor system, comprising, pump means and tank means, a servomotor having cylinder and piston means and first and second ports at opposite ends of said cylinder means, switching valve means having supply and return passages connected respectively to said first and second cylinder ports for one setting thereof, first and second throttle means respectively in said return and supply passages, reducing valve means having first and second flow-through ports with said first flow-through port being connected to said servomotor second port, said reducing valve means having valve opening spring biasing means, said reducing valve means having a valve opening port connected to the downstream side of said second throttle means in said switching valve supply passage, said reducing valve means having a valve closing port connected to said second flow-through port thereof, pressure regulating means having inlet and outlet ports connected respectively to said pump means and said switching valve supply means, said pressure regulating means having valve opening and closing ports connected respectively to the downstream and upstream sides of said valve means supply passage, said reducing valve means and said first and second throttle means of said switching valve means being cooperable to maintain a substantially constant fluid flow through said switching valve means return passage despite an increasing pressure at said servomotor second port due to a negative load applied to said servomotor in

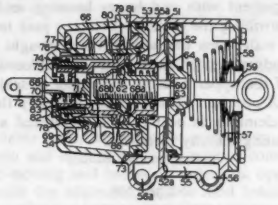
the direction opposite to the normal loading of said servomotor.

4,364,305

BRAKE CYLINDER DEVICE COMBINING A PNEUMATICALLY-APPLIED SERVICE BRAKE AND A SPRING-APPLIED PARKING BRAKE

Georges Dalibout, Gagny, and Michel Grenier, Dampmart, both of France, assignors to WABCO Westinghouse, S.A., Freinville-Sevran, France

Filed Jun. 9, 1980, Ser. No. 157,691
Int. Cl.³ F01B *7/00*
U.S. Cl. 92—63 **6 Claims**



1. A brake cylinder device comprising:

(a) an auxiliary brake piston subject on one side to the force of fluid pressure urging movement of said auxiliary brake piston in a brake release direction;

(b) a parking brake spring acting on the side of said auxiliary brake piston opposite said one side to urge movement of said auxiliary brake piston in a brake application direction;

(c) a service brake piston subject on one side thereof to the force of fluid pressure urging movement of said service brake piston in said brake application direction;

(d) a screw-threaded shaft projecting from said service piston in the direction of said auxiliary piston;

(e) a nut rotatably disposed on said shaft and having a force receiving surface; and

(f) a sleeve member comprising:

(i) a collar at one end supported between a pair of bearing members of said auxiliary piston, whereby said sleeve member is rotatable relative to said auxiliary piston;

(ii) a force transmitting surface normally spaced a predetermined distance apart from said force receiving surface and engageable therewith upon axial movement of said auxiliary brake piston in said brake application direction by said predetermined distance relative to said service brake piston to lock said nut against rotation, whereby the force of said parking brake spring is transmitted to said service brake piston; and

(iii) clutch teeth arranged about one end of said sleeve member;

(g) an annular ring member secured to the end body of said brake cylinder device, said annular ring member having axially arranged splines along the internal surface thereof;

(h) a gear member having an annular external surface arranged with axial splines for engagement with the splines of said annular ring member so as to provide axial relative movement thereto, said gear member having an end face formed with clutch teeth adjacent said clutch teeth at said one end of said sleeve member;

(i) a spring acting against said gear member to effect engagement between said clutch teeth of said gear member and said sleeve member to thereby prevent rotation of said sleeve member and accordingly cause said locking of said nut against rotation during said engagement of said force transmitting and receiving surfaces; and

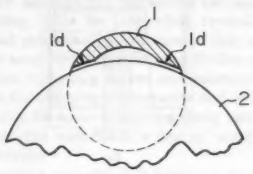
(j) means for establishing and maintaining said force transmitting and receiving surfaces apart by said predetermined distance during displacement of said service brake piston prior to said movement of said auxiliary brake piston, whereby the degree of expansion of said parking brake spring during movement of said auxiliary brake piston said predetermined distance relative to said service brake piston is constant, thus rendering the force characteristic of said parking brake spring constant irrespective of the stroke of said service brake piston.

4,364,306

SWASH PLATE TYPE COMPRESSOR

Mitsuhiro Hattori; Tomoo Fujii, and Hiroya Kono, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Dec. 12, 1979, Ser. No. 102,997
Claims priority, application Japan, Dec. 30, 1978, 53-179244[U]
Int. Cl.³ F04B *1/16*; F01B *3/02*
U.S. Cl. 92—71 **6 Claims**



1. In a swash plate type compressor comprising a pair of axially connected cylinder blocks having therein a plurality of axially extending cylinder bores, a plurality of double headed compressor pistons slidably fitted in said cylinder bores, a drive shaft axially centrally extending through said cylinder blocks and having thereon a swash plate capable of rotating with said drive shaft for causing a reciprocatory compression of each of said double headed compressor pistons between two compression dead centers, each said double headed piston being formed, between two piston heads thereof, with an axially central recess in which a generally outer part of said swash plate is arranged so as to establish an operative connection between each said piston and said swash plate,

the improvement comprising: said axially central recess of each said piston having a bottom surface, a part of which protrudes toward an outer surface of said swash plate, said protruding part being provided as an abutment capable of immediately contacting said outer surface of said swash plate as soon as only a given amount of rotation of each said double headed compressor piston about its own axis occurs during the running of the compressor, said protruding part having its axial length determined so that when each said double headed compressor piston approaches one of said compression dead centers, an outer edge of said generally outer part of said swash plate which also approaches one of said compression dead centers comes away from said protruding part and an inner edge of the generally outer part of the swash plate stays at a position adjacent to the protruding part.

4,364,307

LUBRICATION SYSTEM

Daniel Paro, Kveviax, Finland, assignor to Oy Wartsila AB, Helsinki, Finland

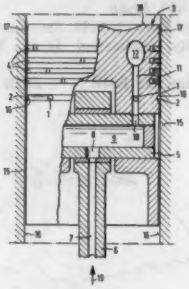
Filed Feb. 13, 1980, Ser. No. 121,286
Claims priority, application Finland, Feb. 16, 1979, 790511
Int. Cl.³ F01B *31/10*
U.S. Cl. 92—157 **7 Claims**

1. A cylinder lubrication system for a combustion engine having a combustion chamber, in which lubricating oil is directed to a cylinder wall of a cylinder through a piston moving

in said cylinder, said piston comprising an outer mantle surface, a top surface at one end of said mantle surface, a piston pin below said top surface and, sealing said combustion chamber, a plurality of piston rings in said mantle surface between said top surface and said piston pin;

said lubrication system including:

a lubrication groove in said outer mantle surface of said piston between said piston pin and at least a majority of said piston rings, said lubrication groove being open in a direction outwardly from said piston; and



a feed system for feeding an accurately controllable amount of lubricating oil to said lubrication groove; said feed system including:

lubricant feed ducts in said piston;

means for continuously supplying the lubricating oil under pressure to said feed ducts;

said feed ducts providing continuous pressurized feeding of said lubricating oil to said lubrication groove in a direction from the interior of said piston outwardly to said groove; and

regulating means for providing an accurately controllable continuous flow of lubricating oil to said groove.

4,364,308

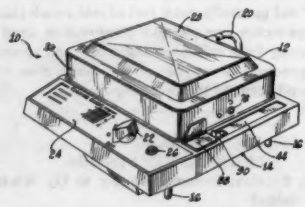
APPARATUS FOR PREPARING FOOD

Raymond John, Carpentersville; Jerome G. Apfelbaum, Arlington Heights, and Robert L. Moore, LaGrange, all of Ill., assignors to Engineering Inventions, Inc. and Multisensors Inc., a part interest

Division of Ser. No. 693,548, Jun. 7, 1976, Pat. No. 4,241,650, which is a continuation of Ser. No. 460,798, Apr. 15, 1979, abandoned, which is a continuation-in-part of Ser. No. 292,479, Sep. 27, 1972, abandoned. This application Sep. 18, 1980, Ser. No. 188,318

Int. Cl.³ A47J *37/06*

U.S. Cl. 99—351 **16 Claims**



1. In a heating apparatus for food comprising a support for the food, an upper housing and a lower housing, said support being positioned within the confines of said housings, heating elements associated with at least one of said housings, means for separating the housings to provide access to the housings for placement of food on the support and for removal of the food, and means for bringing the housings together for confining the food within an enclosed space, said upper housing defining a horizontally disposed top wall and downwardly extending side walls, and said lower housing defining a horizontally extending bottom wall and downwardly extending side walls, the improvement wherein the downwardly extending side walls of said upper housing define a lower edge extending a substantial distance away from the upper housing top wall whereby the upper housing side walls telescope around the lower housing when the housings are brought together for heating food, the space between the housings being thereby substantially closed by said upper housing side walls during use of the apparatus, said lower edge being at all times maintained out of engagement with said lower housing, and means for variably controlling the distance between said top wall and said bottom wall when the housings are brought together to provide for adjustment of the size of said enclosed space, said side walls of the upper housing remaining in said telescoped position in all positions of adjustment whereby the space for the heating elements to heat can be minimized and the efficiency of heating thereby increased.

4,364,309

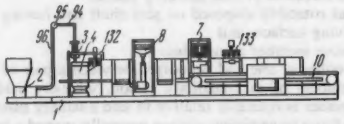
SAUSAGE PRODUCTION LINE

Vasily M. Gorbatov, prospekt Mira, 74, kv. 70; Evgeny T. Spirin, ulitsa Usacheva 29, korpus 3, kv. 203; Vladimir V. Shakhov, ulitsa Yablochkova 31, kv. 73; Viktor V. Vagin, 9 Sokolnicheskaya ulitsa, 1, korpus 2, kv. 78; Vyacheslav I. Khromov, Volgogradsky prospekt, 71 korpus 2, kv. 200; Zimel A. Bogushev, Universitetsky prospekt 6, kv. 125; Viktor I. Eremin, ulitsa Bratskaya, 27 korpus 3, kv. 75; Kaletta M. Vainzof, ulitsa Poteshnaya, 2, kv. 34, and Evgeny R. Podkhvatilin, Stavropolskaya ulitsa, 7b, kv. 16, all of, Moscow, U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,122

Int. Cl.³ A22C *7/00*

U.S. Cl. 99—352 **14 Claims**



1. A sausage production line comprising a sausage meat feeder, sausage meat filling and batching means mounted on a frame which includes horizontally extending guides located on a top base of said frame, said guides accommodating a plate carrying vertically extending spindles which shift on a row-by-row basis, and a hydraulic cylinder with a rod coupled kinematically to the spindles to lower said spindles during the course of filling and batching a plurality of block molds with sausage meat, wherein the block mold includes a housing accommodating vertical rows of molds, said housing containing upper lids mounted for movement in horizontal and vertical planes, and lower lids mounted for movement in a horizontal plane, said block mold further including means attached to the housing adapted to press the lower lids against said housing, means for row-by-row shifting of the spindles, chambers for heat and cold treatment of the finished product, means for discharging the finished product from said molds and means for washing the block molds, all arranged in a closed loop in the direction of production flow, the closed loop being formed by step-type conveyors arranged in two parallel rows located in a single plane, the pitch of each of said conveyors being limited by the dimensions of a single block mold, said conveyors serving to move the block molds from said means for filling and batching the sausage meat into the block molds to said chambers for heat and cold treatment of the finished product, to means for discharging the finished product, to means for

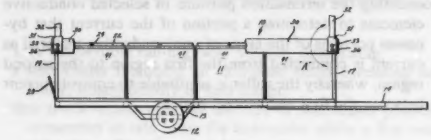
washing the discharged block molds, and back to said sausage meat filling and batching means.

4,364,310

MOBILE BARBECUE APPARATUS

Bernard O. Rufkahr, St. Charles, Mo., assignor to Ben R. Rufkahr, St. Charles, Mo.

Filed Nov. 28, 1980, Ser. No. 211,192
Int. Cl.³ A47J *37/04*
U.S. Cl. 99—357 **9 Claims**



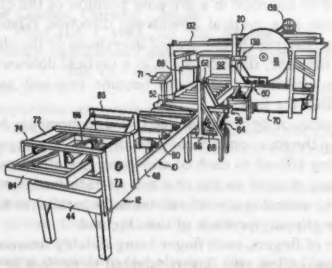
1. A portable barbecue apparatus comprising a firebox having a bottom and upstanding sides, wheels connected to said firebox for moving said barbecue apparatus, opposed bracket means on side top edges, a rotatable food holding receptacle having means for engaging said brackets, and means for releasibly positioning said receptacle means in cooking position over said firebox, said receptacle means being adjustable in width to accommodate items of different widths within said receptacle means, said receptacle comprising opposed walls having a plurality of openings therein, adjustable hinge means connecting the opposed walls adjacent to one common edge thereof, and adjustable lock means for locking together the side edges of the walls which are opposite of the hinged edges, the adjustable hinge means comprising bushings positioned on one wall and spaced openings in the side frame of a second wall and connecting means which when positioned through the bushings and one of the side frame openings defines a chamber between the two walls, and when positioned through the bushings and another of the side frame openings defines a chamber of different width between the two walls, and the lock means comprises spaced openings in a wall of one member alignable with an opening in a wall of the other member, and spring loaded lock means engagable with the said openings in each wall.

4,364,311

PRECISION TRIMMING AND PRECISION CROSS-CUTTING APPARATUS AND METHOD FOR BULK MATERIAL

James B. Platt, III, 12826 Dover Rd., Reisterstown, Md. 21136

Filed Sep. 5, 1980, Ser. No. 184,330
Int. Cl.³ B65B *27/10*
U.S. Cl. 100—6 **15 Claims**



1. In an apparatus for precision trimming and/or precision cutting bulk elongated material into desired lengths comprising:

(a) an elongated infeed conveyor table for supporting the material to be trimmed and cut and for conveying such material along a path extending longitudinally of same;

(b) an elongated cutting table disposed adjacent one end of said conveyor table for receiving and supporting material being conveyed along said path;

(c) power cutting means located adjacent said cutting table, said cutting means including a circular saw mounted for rotation about a substantially horizontal axis on a moveable saw carrier, said saw carriage being operable to move said circular saw across said path to cut the material on said cutting table;

(d) a first substantially horizontal carriage mounted on said conveyor table for controlled reversible movement along said path, said carriage having a first material engaging surface extending across and substantially normal to said path for engaging one end of the material to push same along said conveyor toward said cutting table; and

(e) a second substantially horizontal carriage mounted on said cutting table for controlled reversible movement along said path on the downstream side of said circular saw, said second carriage having a further material engaging surface extending across and substantially normal to said path for engaging the opposite end of said material to act as a stop for material moving along said path to permit cutting of, the material at a desired point; the improvement wherein:

the elongated material is a strapped bundle of lumber which is to be precision trimmed and cut into a plurality of bundles of shorter length; and

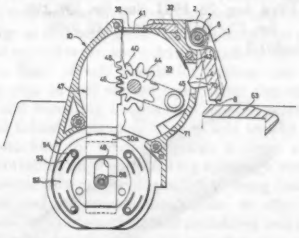
said first carriage includes means for substantially aligning the ends of a bundle of lumber on said conveyor, said aligning means including means for mounting said first material engaging surface on said first carriage so that it is moveable, relative to said first carriage, along said path in a reversible manner, and a controllable piston connected between said first material engaging surface and the front of said first carriage for selectively and controllably exerting pressure on said first material engaging surface to move same relative to said first carriage and under pressure against the adjacent end of a bundle of lumber.

4,364,312

BAR CODE PRINTING DEVICE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Japan

Filed Sep. 15, 1980, Ser. No. 186,916
Claims priority, application Japan, Oct. 8, 1979, 54-138350
Int. Cl.³ B41K *1/12*
U.S. Cl. 101—110 **9 Claims**



1. A printing device comprising:

a machine frame; a printing head supported by said frame and movable with respect to said frame from a rest position to a printing head printing position for printing a set of selected symbols on a label; said printing head further comprising:

a plurality of type rings for printing said selected symbols;

each said type ring being generally circular in shape and having a plurality of type heads formed thereon corresponding to respective ones of predetermined said symbols; said type rings having a selecting position in which they are spaced relatively far apart and can be rotated independently of each other for selecting said selected symbols; said type rings having a type ring printing position in which they are disposed relatively close together for printing;

a stopper member supported on said printing head and having a protruding position in which it engages said machine frame to prevent said printing head from being moved to said printing head printing position; said stopper member having a retracted position in which it does not engage said machine frame and does not prevent said printing head from being moved into said printing head printing position; said stopper member having a projecting cam follower formed thereon;

a cam member having a cam surface against which said projecting cam follower is biased, said cam member being generally circular in shape and having a diameter approximately equal to or less than the diameter of said type rings and being coaxial with said type rings; said cam member being rotatable between first and second cam positions, wherein said first cam position corresponds to said selecting position of said type ring and to said protruding position of said stopper means, and said second cam position corresponds to said type ring printing position and to said retracted position of said stopper means;

said cam member having a first groove formed in said cam surface which receives said cam follower when said cam member is in said second cam position, said stopper member being in said retracted position when said cam follower is received in said first groove; said cam member also having a second groove formed in said cam surface which is shallower than said first groove and which receives said cam follower when said cam member is in said first cam position, said stopper member being in said protruding position when said cam follower is received in said second groove;

moving means for moving said type rings between said selecting position and said type ring printing position;

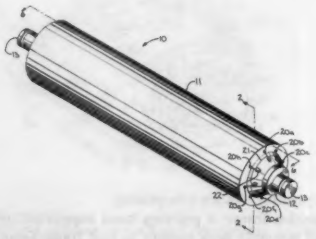
said cam member cooperating with said moving means to move said stopper member from said protruding position to said retracted positon when said moving means moves said type rings to said type ring printing position.

4,364,313

IMPRESSION ROLLER WITH ADJUSTABLE ELECTRICAL CHARACTERISTICS AND METHOD OF MAKING THE SAME

Bruce E. Hyllberg, Gurnee, Ill., assignor to American Roller Company, Union Grove, Wis.

Filed Aug. 25, 1981, Ser. No. 296,218
Int. Cl.³ B41C *1/04;* B41F *9/06*
U.S. Cl. 101—401.1 **9 Claims**



8. A method of making a roller for controlling the amount of current that is conducted from a first region of relatively higher electrical potential to a second region of relatively lower electrical potential that is displaced around a portion of the circumference of the roller from the first region, the method comprising the steps of:

positioning a set of conductive elements around the insulated core to cover the conductive elements excepting the termination portions, wherein the layer of semiconductive material is distributed between the first and second regions and wherein each conductive element has an electrical resistance of at least two orders of magnitude less than the electrical resistance through twice the thickness of the layer of semiconductive material; and

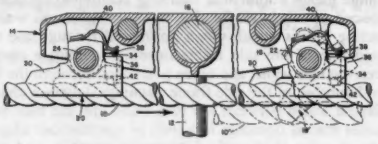
connecting the termination portions of selected conductive elements to determine a portion of the current that bypasses portions of the layer of semiconductive material as current is conducted from the first region to the second region, whereby the roller is adjustable to control current between the first and second regions.

4,364,314

SINGLE ROPE CABLEWAY WITH DETACHABLE HEAD CARRIAGES

Henri Gaudet, Bourg La Reine, France, assignor to Compagnie Miniere de l'Ogooue COMILOG, Neuilly, France

Filed Aug. 11, 1980, Ser. No. 176,801
Claims priority, application France, Aug. 27, 1979, 79 21623
Int. Cl.³ B61B *12/12*
U.S. Cl. 104—225 **3 Claims**



1. A single rope aerial cableway with a load support and haulage rope comprising;

a load carrying head carriage;

a pair of transverse axes spaced apart in lengthwise direction of the rope on said head carriage;

a pair of clips for securing the head carriage to the rope, each of said clips having a solid form of inverted-V for gripping the rope, said clips being rotatably mounted on one of the transverse axes;

a fork means on said clips containing a pair of prongs, adapted to extend in a parallel inoperative position relative to the rope in a gripping position of the clip, and to move in a vertical downward direction relative to the head carriage upon upward movement of the clip relative to the rope, the movement in a vertical downward direction causing the rope to become engaged and guided within the fork;

two pairs of opposite inclined wedge members adapted to grip the rope, one of said pairs of inclined wedge members being affixed to each of said clips, one of the said prongs being secured on the rear side of each wedge member so as to extend rearward substantially parallel to the rope in the gripping position of the clip; and

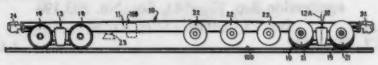
a pair of fingers, each finger being slidably mounted on one of said clips, said fingers adapted to project between the wedge members and to engage the rope gripped between the wedge members, each finger being movable with respect to the wedge members and being capable of disengaging and then reengaging the rope during movement of the rope.

4,364,315

CONVERTIBLE RAIL-HIGHWAY VEHICLE SUPPORT SYSTEM

William T. Beatty, Scotts, Mich., assignor to Rail-Or-Trail Corp., Kalamazoo, Mich.

Filed Aug. 29, 1980, Ser. No. 182,349
Int. Cl.³ B60F *1/00*; B61D *15/00*; B61F *13/00*; B62D *61/12*
U.S. Cl. 105—215 C **10 Claims**



1. A convertible rail-highway vehicle, comprising:

a semi-trailer including an elongated beam extending centrally, longitudinally of said trailer;

first truck means adjacent the rear of said trailer pivotally connected to said beam for movement about a first vertical axis, said truck means including

(a) at least a pair of spaced and parallel axle means for carrying at opposite ends of each thereof a pair of flanged wheel means and a pair of highway wheel means, the axes of rotation of said highway wheel means being radially offset from the axes of rotation of said flanged wheel means;

(b) a laterally extending support member pivotally connected to said elongated beam, said support member having a pivot means thereon; and

(c) a pair of elongated and parallel bar means supported on said laterally extending support member and on opposite lateral sides of said beam, said pivot means pivotally supporting each of said bar means on said laterally extending support member for movement about an axis extending transversely of the longitudinal axis of said trailer and universal joint coupling means on each of said bar means coupled to each of said axle means for (1) maintaining the parallel spacing between said axle means, (2) facilitating the movement of said bar means about said pivot means and for (3) supporting each of said axle means for rotation about the longitudinal axis thereof;

releaseable connecting means connecting said trailer selectively to a highway tractor and to a second truck means adjacent the front end of said trailer for pivotal movement also about a second vertical axis; and

drive means on said first truck means operatively connected to each of said axle means for effecting a rotary drive of said axle means and a movement of said flanged wheels and said highway wheel means on each of said axle means to an exchanged relation relative to the ground.

4,364,316

APPARATUS FOR PLANTING SEEDLINGS

Anthony Paladino, Woodstock, Canada, assignor to Timberland Equipment Limited, Ontario, Canada

Filed Jun. 1, 1981, Ser. No. 269,506
Claims priority, application Canada, Feb. 20, 1981, 371394
Int. Cl.³ A01C *11/00*
U.S. Cl. 111—3 **17 Claims**

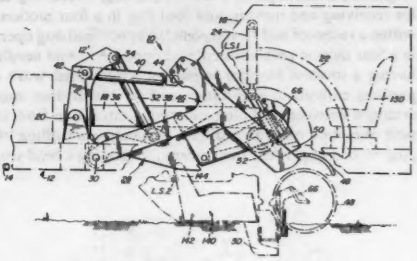
1. Plant apparatus comprising:

a mobile frame suitable for forward travel over the ground;

a planting arm movably mounted to the frame and extending from a mounting location;

the planting arm including a dibble remote from the mounting location and adapted to cut into the ground when the dibble moves toward it during forward travel of the frame;

planter means carried by the planting arm and adapted to support a seedling for planting in the cut made by the dibble, the planter means including: upright spaced side walls at the rear of the dibble and a ledge which together form a pair of side walls and the bottom of a pocket for receiving and containing a seedling prior to planting, an elongated ejector tongue extending downwardly into said pocket to a point adjacent the ledge and forming a frontal wall for the pocket in its forward position, and an ejector mechanism operatively connected to said ejector tongue for moving same rearwardly of the pocket to eject a seedling therefrom into the cut formed by the dibble, and wherein the planter means further includes



a cover means mounted for movement between a closed position where it forms the rear wall of said pocket and an open position permitting escape of the seedling from the pocket;

and mechanism connected to said cover means for moving same to the open position upon rearward movement of the ejector tongue.

4,364,317

MACHINE FOR SEWING TOGETHER WORKPIECE PARTS HAVING EDGES OF EQUAL OR UNEQUAL LENGTH BY MEANS OF A BEAD SEAM

Gerhard Schneider; Rolf Ludwig, and Jochen Fischer, all of Bielefeld, Fed. Rep. of Germany, assignors to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

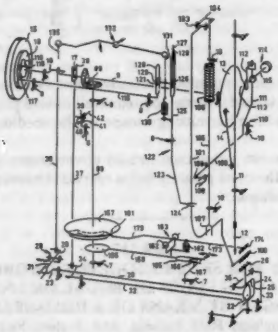
Division of Ser. No. 875,417, Feb. 6, 1978, Pat. No. 4,274,345.
This application Jun. 23, 1980, Ser. No. 161,905
Int. Cl.³ D05B *35/08*
U.S. Cl. 112—132 **14 Claims**

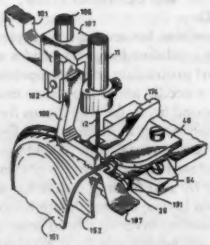
1. A sewing machine for sewing a workpiece consisting of a first layer having a relative long edge and a second layer having a relative short protruding edge, comprising: stitch forming means including a needle and a looptaker mechanism; feeding means for said second layer; feeding means for imparting longitudinal work compressing motions to said first layer; an intermediate member arranged in front of said needle and between said first layer and said second layer for preventing a ruffling of said second layer by said feeding means for said first layer; an edge guide for said layers; and means for forming said protruding edge of said second layer to a bead seam and comprising a forming edge at said edge guide for prefolding said protruding edge of said second layer, and a driven auxiliary ruffling means arranged in front of said needle for folding said prefolded protruding edge of said second layer about the edge of said first layer and imparting longitudinal work compressing motions to said folded protruding edge of said second layer.

3. In a machine for sewing together a vamp and a plug having a protruding edge provided for forming a bead seam on a moccasin-type shoe comprising: stitch forming means including a needle and a looptaker mechanism, an edge guide for guiding said vamp and said plug and prefolding said protruding edge of said plug, feeding means for said plug, adjusting means for said feeding means for said plug for determining stitch length, feeding means for imparting longitudinal work compressing motions to said vamp, means for adjusting longitudinal motions of said feeding means for said vamp, and an intermediate member between said feeding means for said plug and said feeding means for said vamp for preventing ruffling of said plug by said feeding means for said vamp; a driven auxiliary ruffling means arranged in front of said needle for folding said

prefolded protruding edge of said plug about the edge of said vamp and imparting longitudinal work compressing motions to said folded edge of said plug.

12. In a machine for sewing together a vamp and a plug of true moccasin footwear, comprising: a work supporting arm; a bracket arm; stitch forming means including a needle, an arm shaft pivoted in said bracket arm for driving said needle, and a looptaker; a throat plate; a lower feed dog; a feed dog carrier for receiving and moving said feed dog in a four motion path within a recess of said throat plate; an upper feed dog operating in a four motion path adjacent and opposite to said needle and having a toothed base for imparting longitudinal work compressing motions to said vamp; and an intermediate member arranged between said plug and said vamp and in front of the path of motion of said needle for preventing a ruffling of said plug by said upper feed dog; means for forming a bead seam by





said plug having a foldable margin protruding over the edge of said vamp and including: an edge guiding member secured to said upper feed dog and having a forming wall for prefolding said margin of said plug and surmounting said throat plate and a recess in said forming wall; a second intermediate member attached to said upper feed dog and having a sliding surface and being toothed at the base like said upper feed dog, and located between said vamp and said folded margin of said plug and in front of said needle; a folding and ruffling finger for folding said prefolded margin of said plug about the edge of said vamp and said second intermediate member, and slideably received in said recess of said forming wall; first driving means for said folding and ruffling finger for imparting movements in feed direction; and second driving means imparting movements perpendicular to the feed direction to said finger for finally folding said prefolded protruding edge of said plug.

4,364,318

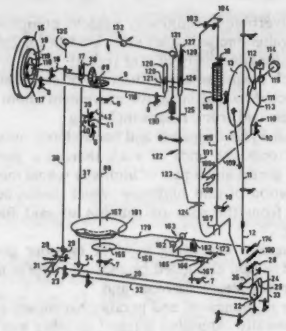
MACHINE FOR SEWING TOGETHER WORKPIECE PARTS HAVING EDGES OF EQUAL OR UNEQUAL LENGTH BY MEANS OF A BEAD SEAM

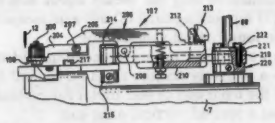
Gerhard Schneider; Rolf Ludwig, and Jochen Fischer, all of Bielefeld, Fed. Rep. of Germany, assignors to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

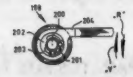
Division of Ser. No. 161,905, Jun. 23, 1980, which is a division of Ser. No. 875,417, Feb. 6, 1978, Pat. No. 4,274,345. This application Sep. 17, 1981, Ser. No. 303,194

Int. Cl.[3] D05B *35/08, 35/04*

U.S. Cl. 112—147 1 Claim







1. In a machine for sewing together true moccasin shoe parts including a vamp and a plug, means for forming a bead seam with a plug having a foldable margin protruding over the edge of said vamp and comprising: an intermediate member arranged between said vamp and said margin of said plug to be folded; a roller having a knurled profile for folding said protruding margin about the edge of said vamp and said intermediate member prior to sewing, and overrunning means for allowing rotation to said roller only in one direction; a rocking lever pivotally mounted and carrying said roller; and driving means for moving said rocking arm carrying said roller in synchronism with the stitch forming means of said sewing machine for imparting work compressing motions to said margin of said plug by said roller when said overrunning means is blocked, and to prefold said margin when said roller is unblocked.

4,364,319
CONTROLLED THREAD CLAMP DEVICE FOR NEEDLE THREADS

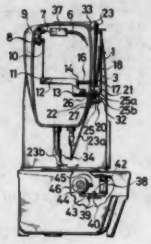
Hermann Niehaus, Steinhagen; Günter Droste, Leopoldshöhe, and Wilhelm Stapel, Bünde, all of Fed. Rep. of Germany, assignors to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Apr. 6, 1979, Ser. No. 27,855

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1978, 2815297

Int. Cl.³ D05B *29/00*

U.S. Cl. 112—238 **13 Claims**



1. In a sewing machine having a thread lever, a needle bar carrying a needle having a needle eye, and a thread-tensioning device releasably controlled by a lower shaft of the machine, a controlled thread-clamping device comprising:

a thread clamp disposed in a region between said thread lever and said needle eye, the thread clamp being coupled with said thread-tensioning device for alternating control of a needle thread passing between said lever and said eye; and

control means for timed engagement of the thread clamp within a working cycle of the sewing machine to clamp a leading thread section shortly before the reaching of upper dead point by the thread lever thereby presenting a respective desired length of the starting thread, and to release the thread-tensioning device, said control means including a release ring mounted on said shaft, an entrainer cyclically displaceable by said ring, and coupling means connecting intermittently said entrainer with said clamp.

4,364,320
GARMENT TOE CLOSING SYSTEM

George D. Nakhle; Cecil R. Bell, both of Pinnacle; Arthur R. Edwards, Winston-Salem; Willie M. Lathery, Germanton, and Navin D. Patel, Winston-Salem, all of N.C., assignors to Consolidated Foods Corporation, Winston-Salem, N.C.

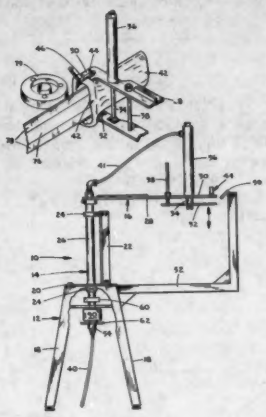
Filed Feb. 23, 1981, Ser. No. 236,884

Int. Cl.³ D05B *19/00, 21/00*

U.S. Cl. 112—262.2 **12 Claims**

1. A method of closing an open portion of a tubular hosiery blank having a welt end and a toe end comprising the steps of; transferring a hosiery blank from a supply station to a hosiery blank loading station, supporting the welt end portion of the hosiery blank in a prescribed manner, spreading open the welt end portion of the blank, transferring the blank from the loading station to a suction tube of a hosiery blank holding unit, positioning the hosiery blank upon the suction tube, presenting the toe portion of the hosiery blank to sewing instrumentalities, and sewing closed the blank toe end.

11. In an automatic apparatus for seaming of tubular hosiery blanks having a welt portion at one end and a toe portion at the opposite end comprising a support assembly, a hub assembly rotatable upon said support assembly, hosiery blank support means secured to said hub assembly for rotary displacement, said support means including at least one arm means extending generally radially from said hub assembly, said arm means including vertically spaced, aligned, first and second fingers and means for retaining a hosiery blank welt portion upon said fingers, said support means further including means for expanding or collapsing said fingers, means for displacing said fingers in an expanded condition and having a hosiery blank thereon in a arcuate path, a displaceable tube for receiving the



hosiery blank on the outer peripheral portions thereof, means for facilitating removal of the blank from said fingers, means for presenting the toe portions of the blanks supported upon said displacable tube to sewing instrumentalities for sewing closed the toe portion.

4,364,321
FABRIC TOP FEEDER FOR A SEWING MACHINE

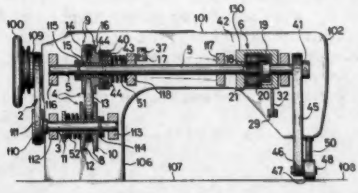
Hubertus Bochert, Steinhagen, Fed. Rep. of Germany, assignor to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Sep. 18, 1981, Ser. No. 303,598

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 3035540

Int. Cl.³ D05B *27/06*

U.S. Cl. 112—311 **9 Claims**



1. In a sewing machine having an arm shaft driving a needle bar to reciprocate a needle through a fabric workpiece at a stitching location and connected to a mechanism engageable with an underside of said workpiece for advancing same past said location, and a fabric feeder engageable with said workpiece from above to advance said workpiece, said feeder being provided with a mechanism connected to said shaft for imparting intermittent angular displacement thereto, the improvement wherein said mechanism comprises:

a steplessly variable transmission connected to said shaft;

a planetary gear transmission having three mutually interengaged elements including a first input element, a second input element and an output element;

means connecting said first input element to said steplessly variable transmission;

a crank drive connected to said second element for angularly oscillating same; and

means connecting said output element to said fabric feeder, the adjustability of said steplessly variable transmission varying a stepping angle of said feeder and the throw of said crank drive controlling a dwell of said feeder.

4,364,322

LIFTABLE STEERING HOUSE OR CONTROL CABIN

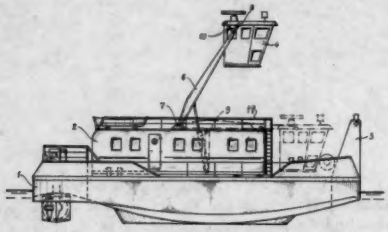
Johannes van Roon, A 74, 2975 BC Ottoland, Netherlands

Filed Mar. 24, 1980, Ser. No. 133,396

Claims priority, application Netherlands, Mar. 23, 1979, 7902315; Apr. 12, 1979, 7902933

Int. Cl.³ B63B *29/02, 29/22*

U.S. Cl. 114—71 6 Claims



1. A liftable and lowerable control cabin especially intended for a sailing or floating vessel such as a pushing tug, in which said cabin is moved off a deck of the vessel from a forward or rearward section thereof, wherein there is provided a lifting mechanism for changing position and direction of movement of said cabin during lifting and lowering and as it moves parallel to itself, said lifting mechanism being defined by only a pair of carrying arms having at least two parts, each of said arms being pivotally connected at a first end to said deck and at a second end to said cabin at above the cabin center of gravity and each arm having a hydraulic ram connected between the deck and near the lower end of said arm whereby vertical movement of the entire of said cabin from said deck occurs by the parts being pivoted in synchronism, all positions of said cabin being working positions with the cabin continuously being carried by said lifting mechanism from an uppermost position above the deck to a low position below the deck so as to provide an unobstructed space below said cabin when lifted.

4,364,323

VERTICAL STRESSED MOORING TETHER IN A FLOATING OIL PLATFORM

William D. Stevenson, Edinburgh, Scotland, assignor to Vickers Limited, London, England

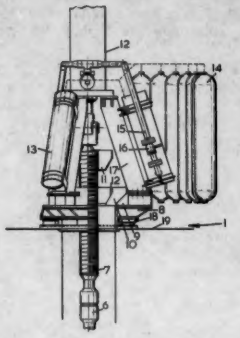
Filed Jan. 21, 1981, Ser. No. 226,758

Claims priority, application United Kingdom, Jan. 26, 1980, 8002685

Int. Cl.³ B63B *21/52*

U.S. Cl. 114—265 6 Claims

1. A mooring tether arranged to be connected between a floating oil platform and an anchorage on the sea bed incorporating a tether member, a connector fitted to one end of the tether member and arranged to be connected to an anchorage on the sea bed, a screw-threaded section attached to the other end of the tether member, an adjustor nut movable along the screw-threaded section, an adjustor nut adaptor penetrated by the screw-threaded section and supported on the platform, and a gas-operated tension spring device coupled to the upper end of the screw-threaded section and arranged to apply an elastic



tensile force between the upper end of the tether and the platform.

4,364,324

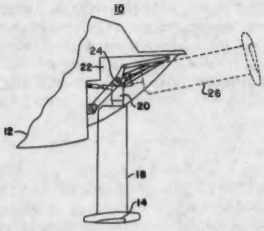
STRUT RELEASE MECHANISM FOR HYDROFOIL CRAFT

Gary J. Warner, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 29, 1981, Ser. No. 258,877

Int. Cl.³ B63B *1/28*

U.S. Cl. 114—280 13 Claims



1. In a hydrofoil craft having a forward, depending pivotal strut and a foil secured to the strut adjacent to the bottom of the strut, a king post connected to the frame of the hydrofoil craft, connection means securing said king post to said strut adjacent to the top of the strut;

the improvement in said connection means comprising a pivot member separably disposed between said king post and said strut to define a pivot axis;

frangible connector elements between said king post and said strut for normally retaining said king post and said strut in a rigid, fixed relationship with said pivot member therebetween;

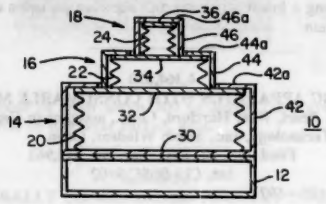
said frangible connector elements being adapted to rupture when said strut experiences an impact load exceeding a predetermined value;

said pivot member being separably disposed between the said king post and the said strut such that the strut will pivot about the said pivot member upon rupture of said frangible connection means and the said strut will separate from the said king post downwardly, away from the hull of said hydrofoil craft.

4,364,325
PASSIVE CONTROLLED BUOYANCY APPARATUS

Philip N. Bowditch, Cohasset, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Nov. 24, 1980, Ser. No. 209,834
Int. Cl.³ B63B *39/04, 43/06*
U.S. Cl. 114—331 9 Claims



1. A passive near-neutral buoyancy platform adapted for submersion in a liquid medium having a compressibility coefficient a_L, comprising:

a substantially incompressible base structure and n coupled, variable volume hollow cells coupled thereto, where n is an integer, each cell having a predetermined internal charge pressure and including means responsive to the pressure in said liquid exterior to said cell to monotonically vary the volume of said cell between a predetermined minimum and maximum values,

wherein the compressibility of said platform is a_S, where a_S is less than a_L,

wherein the internal charge pressure for the i^{th} cell is P_{Ci} and where the charge pressures for said cells are successively increasing whereby

$$P_{C1} < P_{C2} < \ldots < \ldots P_{Cn}$$

wherein the maximum volume for the i^{th} cell is V_{Ci}, and the maximum volume for said platform (V_o) equals the sum of the volume of said base structure and

$$\sum_i V_{Ci},$$

and

wherein V_{Ci} is predetermined so that the density difference between said platform and said liquid equals predetermined negative maximum values when the pressure in said liquid external to said platform equals P_{Ci} and $P_{C(i+1)}$, and that pressure equals a predetermined positive value where the rates of change of density of said platform and said liquid with pressure are equal at a pressure between P_{Ci} and $P_{C(i+1)}$.

4,364,326
DEVICES TO CONTROL BOATS AND OTHER OBJECTS ON MOVING SHIPS

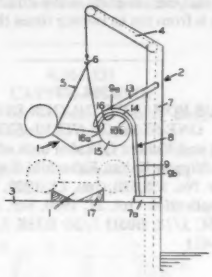
Roderick D. Pike, 8 Lower St., Stroud GL5 2HT, Gloucestershire, England

Filed Jul. 28, 1980, Ser. No. 172,867
Claims priority, application United Kingdom, Aug. 29, 1979, 7929873; Nov. 27, 1979, 7940881
Int. Cl.³ B63B *23/02*
U.S. Cl. 114—369 5 Claims

1. In a device characterized as a fixed jib rotating crane, which can be mounted on the deck of a ship, which includes

a hoist having a vertical section rotatable about a base, jib projected above said vertical section and base, pulleys and hoist wire, a crane hook attached to the end of said hoist wire from which a bridle can be suspended for attachment to a boat or other object so that the boat or other object can be raised from the deck of the ship, suspended, and lowered, the improvement comprising

a rigid restraining structure, in combination with said hoist, located adjacent the vertical section of said hoist, which is constituted of a lower generally straight segment the terminal end of which is attached directly to said base of said hoist, and an upper part-circular shaped section the open, concave side of which presents laterally opposed locating surface portions, the lower straight segment and said concave side of said rigid restraining structure forming a surface against which the boat or other object is

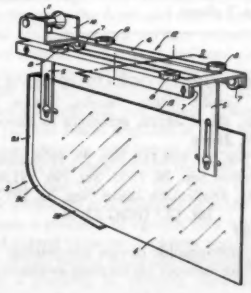


rested to avoid physical contact of the boat or other object with said hoist, the concave side of which can engage the side edge portion of the boat or other object to maintain horizontal location for the engaged boat or other object and keep it away from the hoist from which the boat or other object is suspended, the rigid restraining structure rotating in unison with said hoist about the rotational axis thereof to retain its engagement with said boat or other object to thereby suppress the lateral swinging movement of said boat or other object with respect to the hoist as when the ship is moving in a seaway, or the hoist rotated for lowering the boat.

4,364,327
STRIPPING EXCESS COATING LIQUID FROM MOVING STRIP MATERIALS

Richard C. Barrett, Mount Ousley, Australia, assignor to John Lysaght (Australia) Limited, Sydney, Australia

Filed Jun. 24, 1981, Ser. No. 276,999
Claims priority, application Australia, Jan. 21, 1981, 66384/81
Int. Cl.³ B05C *11/02*
U.S. Cl. 118—102 4 Claims



1. Apparatus for use in stripping excess coating liquid from a strip moving upwardly in the direction of its length, and of the kind comprising: a baffle plate having a top portion whereof the length extends parallel to an edge of said strip and

the width extends on either side of the plane of said strip, and a bottom portion which extends from the bottom of said top portion and is trended away from said strip edge, a carrier plate disposed substantially co-planar with the strip and having said baffle plate mounted on that edge of said carrier plate nearest to said strip, a truck movable towards and away from said strip edge and having said carrier plate suspended from it, means urging said truck to approach said strip edge, and means to maintain a minimum spacing between said strip edge and said top portion;

characterised in that said carrier plate extends further away from said strip than does said bottom portion, and the length of said carrier plate in the direction normal to said strip edge is from ten to twenty times the width of said top portion.

4,364,328

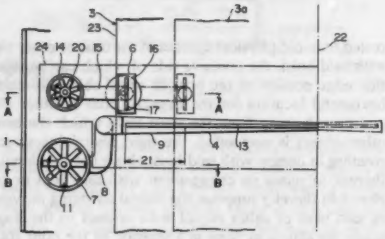
APPARATUS FOR CONTINUOUS DIP-PLATING ON ONE-SIDE OF STEEL STRIP

Shuzo Fukuda, and Yutaka Ohkubo, both of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 158,630, Jun. 11, 1980, Pat. No. 4,323,604. This application Oct. 21, 1980, Ser. No. 199,355

Int. Cl.³ B05C *3/18;* B05D *1/26;* B23K *1/08;* C25D *17/00*

U.S. Cl. 118—411 **22 Claims**



1. In an apparatus for dip plating one side of a steel strip, comprising a bath for holding plating material with a surface, said steel strip being horizontally movable over said surface of said bath, the improvement wherein said bath has a substantially still surface and wherein comprising a plurality of jetting nozzles disposed with their ends above said still surface and with a space between said ends of said nozzles and said one side of said strip, and pump means for pumping plating material through said nozzle ends onto said one side of said strip; and wherein said jetting nozzles comprise a center nozzle disposed in the width dimension of said strip, and at least one edge nozzle disposed in the length dimension of said strip, and wherein said center nozzle and said at least one edge nozzle are integral and in a T shape.

4,364,329

ELECTROPHOTOGRAPHIC DEVICE

Keiichi Mural, Toride; Naoto Tanaka, Tokyo, and Hideyo Kondo, Toride, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 945,115, Sep. 25, 1978, abandoned. This application Sep. 26, 1980, Ser. No. 191,026

Claims priority, application Japan, Sep. 30, 1977, 52-118212

Int. Cl.³ G03G *15/06*

U.S. Cl. 118—652 **9 Claims**

1. An electrophotographic device comprising:

an image-holding member for forming an electrostatic image thereon;

means for forming a toner image on said image-holding member;

means for transferring the toner image from said image-holding member to a recording material;

means for cleaning the surface of said image-holding member to remove the remaining toner thereon after the transfer of the toner image; and

means for abrading the surface of said image-holding member to prevent the buildup of excess toner thereon after the cleaning of the image-holding member, said means including an abrasive member comprising a support and a layer overlying the support, said layer being formed of a resin having a linear structure and abrasive particles dispersed therein.

4,364,330

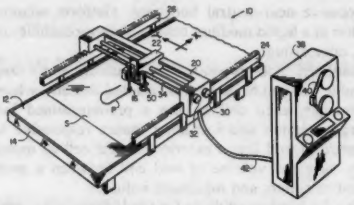
CUTTING APPARATUS WITH CONSUMABLE MARKER

David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Jun. 12, 1981, Ser. No. 272,961

Int. Cl.³ B05C *9/02*

U.S. Cl. 118—697 **6 Claims**



1. In combination in an apparatus for cutting limp sheet material positioned on a support surface and including an automatically controlled cutting tool for cutting the sheet material and carriage means for controllably moving the cutting tool and the material on the support surface relative to one another along a desired cutting path, the improvement comprising: a rotatable marking tool suspended from the carriage means for movement with the cutting tool over the support surface and the sheet material on the surface, the marking tool including a consumable shaft of marking matter having a depending end located adjacent the sheet material, drive motor means connected in driving relationship with the marking tool for rotating the consumable shaft about the axis of the shaft and marking the exposed surface of the sheet material while the depending end is engaged with the limp sheet material, and actuating means connected with the tool for moving the depending end of the consumable shaft into engagement with the sheet material on the support surface whereby motor driven rotation of the shaft about the shaft axis abrasively deposits some of the marking matter on the material.

4,364,331

FLOOR COVERING FOR STABLING

Pierre Foenard, Paris, France, assignor to Societe a Responsabilite Limitee: Societe de Development pour l'Agriculture Sodelvage, Sainte Gauburge, France

Continuation of Ser. No. 166,651, Jul. 7, 1981, Pat. No. 4,338,369. This application Aug. 18, 1981, Ser. No. 293,845

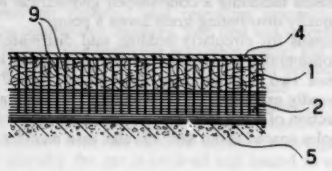
Claims priority, application France, May 30, 1980, 80 12061

Int. Cl.³ A01K *1/015;* B32B *5/06*

U.S. Cl. 119—28 **14 Claims**

1. A floor covering for stables, said covering comprising at least two layers of textile material tufted together, said layers defined as a top layer and a bottom layer, a highly abrasion resistant material impregnated into the outer surface portion of said top layer, said impregnation material being sufficiently permeable to allow fluid evaporation therethrough, said impregnation material comprising a composition selected from the group consisting of an acrylic resin, a cross-linked copolymer of an acrylic resin and styrene, a cross-linked copolymer

of an acrylic resin and styrenebutadiene, and polyvinyl chloride, said impregnation material being applied to said top layer



in an amount of from about 500 to about 2,000 grams per square meter of top layer surface area.

4,364,332

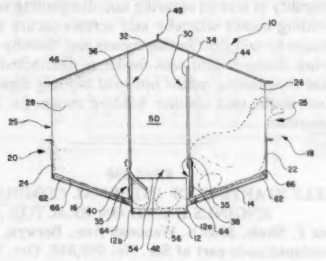
INTEGRALLY CONSTRUCTED POULTRY NESTING HOUSING FOR AUTOMATICALLY COLLECTING EGGS

William V. Smith, Rte. 2, Liberty, N.C. 27298

Continuation-in-part of Ser. No. 192,340, Sep. 29, 1980, abandoned, which is a continuation of Ser. No. 29,775, Apr. 13, 1979, abandoned. This application Sep. 29, 1981, Ser. No. 306,693

Int. Cl.³ A01K *31/16*

U.S. Cl. 119—48 **10 Claims**



1. An automatic egg collecting system comprising an elongated unitized single story housing structure including two spaced apart nest rows, each nest row having a series of longitudinally aligned nest disposed in side-by-side relationship, each nest row including an outer side, an inner side, a plurality of longitudinally spaced nest partitions extending between said outer and inner sides and an incline bottom inclined generally downwardly from the outer side towards the inner side, and wherein said inner sides of said nest rows are laterally spaced apart so as to define an alley extending therebetween; said outer sides including longitudinally extending sheet metal walls extending along the lower portion of said outer side, and wherein said outer sheet metal wall terminates intermediately between the upper and lower extremities of the outer sides so as to define said access opening to the respective nest; said inner side of each nest row including a retaining wall and an egg outlet opening means formed about an area adjacent the bottom of said nest; baffle means disposed within said egg outlet means for directing eggs from the bottom of each nest through said outlet opening means in a gentle fashion; said laterally spaced nest rows forming a part of said integrally constructed single story housing structure by the provision of roof means that extends over the top of said nest rows and on over said alley to enclose the top of said single story housing structure and to form the entire top thereof; end walls secured across each end of said unitized single story housing structure; conveyor support means extending between the inner sides of said nest rows adjacent the egg outlet opening means for supporting conveyor means thereon, said conveyor support means extending between the inner terminal edge of the bottom of said nest and integrally constructed therewith to form a part of the bottom of said nest housing structure and wherein said conveyor support means is spaced below the lowest level of said bottom; end opening means formed in said end wall and aligned with said conveyor support means for enabling said conveyor means to extend longitudinally through said unitized housing structure; and an unstable anti-roost bar assembly movably mounted along the top of said housing structure for effectively discouraging chickens from landing thereon and roosting on top of the housing structure, said anti-roost bar assembly including an elongated resting bar and connector means movably mounting said elongated resting bar to said housing such that said elongated resting bar is unstable and tends to dump the chickens therefrom as they attempt to stand and roost thereon.

4,364,333

CATTLE FEEDER

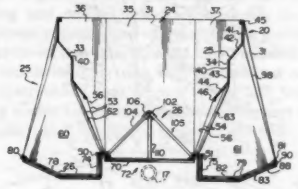
Bernard Touchette, Ste-Therese, Canada, assignor to B. R. Choiniere Ltee, Boisbriand, Canada

Filed Jun. 11, 1980, Ser. No. 158,403

Claims priority, application Canada, Mar. 5, 1980, 347051

Int. Cl.³ A01K *5/00*

U.S. Cl. 119—52 R **12 Claims**



1. A cattle feeding box adapted to be removably mounted to a four wheel farm wagon of the type having a narrow reach between the steerable fore carriage and the rear axle, said cattle feeding box comprising an elongate open top rectangular receptacle having a bottom, front and rear end walls extending upwardly and essentially vertically from said bottom at each opposite end thereof, and two lateral walls extending between said end walls, each lateral wall comprising a lateral panel which extends downwardly from the upper edge of the corresponding lateral wall and terminates well above said bottom, and a plurality of feeding stations below said lateral panel whereby cattle may have access to feed on said bottom comprising a generally narrow central raised portion extending longitudinally of said cattle feeding box and providing vertical support for the feed thereabove, the underside of said central raised portion defining a unobstructed longitudinal space for the reach of said farm wagon, said bottom also having a substantially vertical trough wall on each side of said central raised portion between the front and rear wheels of said farm wagon, a feed trough bottom surface extending outwardly from the lower edge of each trough wall and rising slightly at its free edge in order to define with said trough wall a relatively low and deep feed receiving pocket at each feeding station between the front and rear wheels of said farm wagon, and a pair of parallel beams disposed at each upper corner of said raised central portion, said beams extending between said front and rear walls and resting upon the front axle of said fore carriage and upon said rear axle, said cattle feeding box also having two downwardly and inwardly directed racks, each of which comprises a plurality of upright bars which are rigidly secured to and extend between the lower region of said lateral panel of each of said lateral walls and the adjacent one of said beams and of a plurality of vertical, outwardly projecting partitions extending between said feed receiving pockets and the outer surfaces of said lateral panels and laterally deliminating said feeding stations, and, wherein each of said partitions is essentially of triangular configuration and has its lower edges bent at a right angle, thus forming integral flanges extending

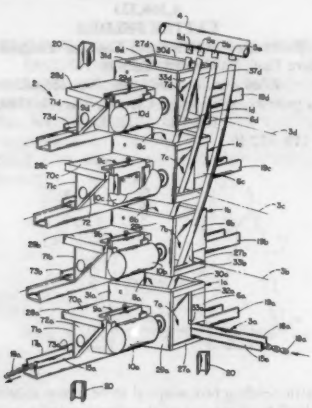
along said trough wall and along said trough bottom surface, each feeding station between said front and rear wheels comprising individual trough panels forming said trough wall and said trough bottom surface, said individual trough panels being supported by said integral flanges.

4,364,334

LOW PROFILE MULTI-TIER, AUTOMATED, POULTRY CAGE FEEDER SYSTEM

William R. Williams, Roswell, Ga., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Jan. 19, 1981, Ser. No. 226,352
Int. Cl.³ A01K *39/01*
U.S. Cl. 119—52 AF **9 Claims**



1. In a multi-tier poultry feed system comprising a plurality of stacked conveyor mechanisms to which feed is supplied from a remotely disposed source by feed supply conduits, said mechanisms including a hopper, a feed trough and means for conveying feed from said hopper throughout said feed trough, and wherein said feed supply conduits supply feed to each of said hoppers, the improvement comprising:

said hoppers being vertically stacked closely together one above the other for space saving and efficiency;

said hoppers each including a housing formed by a plurality of walls that define an area for containing feed;

said housing having an upwardly facing open top end for receiving feed;

said housing walls being so arranged to provide a cavity below a portion of the hopper and a side opening leading into said cavity thereby providing communication with said cavity from outside of said hopper; and

said cavity and side opening, when one of said hoppers is located directly above another of said underlying hoppers, forming a passageway disposed immediately above the upwardly facing open end of said underlying feed hopper and extending outside the confines of the walls of said housing, whereby said passageway can receive one of said feed supply conduits, so as to permit transport of feed through said conduit from said remotely disposed source into the underlying feed hopper.

4,364,335

ANIMAL FEEDER

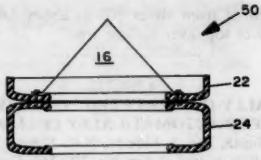
Allan Livingston, Kenmare, N. Dak.

Filed Apr. 21, 1981, Ser. No. 256,076
Int. Cl.³ A01K *5/00*
U.S. Cl. 119—61 **5 Claims**

1. In combination, cone and tire feeder for feeding of grain to livestock in an agricultural environment, said feeder combination comprising:

a. means including a cone-shaped geometrical member for equally distributing grain about a point;

b. means for circularly holding said distributed grain for consumption by livestock, said holding means including at least two circular base tire members including an upwardly extending lip representing a substantially vertical section of a top farm tractor tire, a plurality of rain drain holes spaced about said circular base member and means



securing said tires on top of each other for a bottom tire and top tire relationship where the bottom tire supports the top tire and distributing means secured thereto; and,

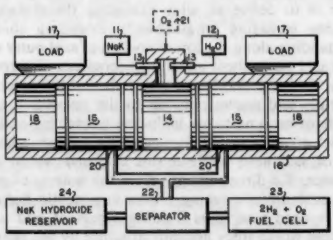
c. plurality of screws securing said distributing means to said holding means whereby said screws secure said holding means to said distributing means and thereby animal feed when dumped into said feeder is distributed equally by said distributing means into said holding means for equal feed about said circular holding means for animal consumption.

4,364,336

SELF STARTING OF INTERNAL COMBUSTION ENGINES BASED ON REACTOR

Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill. 60402

Continuation-in-part of Ser. No. 950,845, Oct. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 781,747, Mar. 28, 1979, abandoned, which is a continuation-in-part of Ser. No. 578,527, May 19, 1975, Pat. No. 4,020,798, which is a continuation-in-part of Ser. No. 464,454, Apr. 26, 1974, abandoned, which is a continuation-in-part of Ser. No. 457,207, Apr. 2, 1974, Pat. No. 3,911,284, which is a continuation-in-part of Ser. No. 301,285, Oct. 27, 1972, abandoned. This application Jul. 31, 1980, Ser. No. 174,247
Int. Cl.³ F02B *75/12*
U.S. Cl. 123—1 A **13 Claims**



1. A system for starting an internal combustion engine, comprising:

an internal combustion engine having at least one combustion chamber which communicates with a movable member,

means for attaining an expansion phase of at least one of the movable members,

means for retaining the expansion phase until the engine is to

be started whereby the combustion chamber pressure and temperature may approach ambient levels,

a first reactant and reservoir therefor and a second reactant and reservoir therefor, said reservoirs communicating with the combustion chamber, said first and second reactants reacting with negligible activation energy and evolving a gas whereby the gas is evolved and heated upon contact of the first and second reactants, and

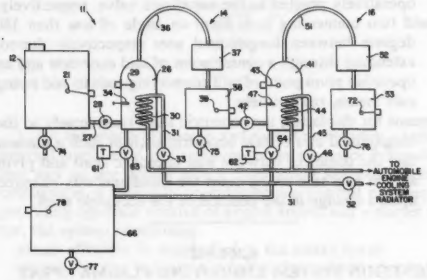
means for injecting the first and second reactants in a contacting relationship into the combustion chamber which communicates with said movable member in an expansion phase whereby the gas is evolved and heated to expand against the movable member to provide energy for advancing and starting the engine.

4,364,337

AUTOMOTIVE ONBOARD FUEL PRODUCTION SYSTEM

Frederick McCann, 9848 Ridgewood Dr., Twinsburg, Ohio 44087

Filed Aug. 4, 1980, Ser. No. 175,138
Int. Cl.³ F02B *75/12, 43/08*
U.S. Cl. 123—3 **7 Claims**



1. In a motor vehicle having an internal combustion engine, the improvement comprising an onboard distillation system producing fuel for said internal combustion engine; said distillation system comprising a mash storage tank, a distillation vessel having a drain valve and a thermostat means sensing the temperature in said distillation vessel, a heat exchanger contained within said distillation vessel and receiving coolant from said internal combustion engine at an elevated temperature, said distillation vessel having a fuel vapor output port through which fuel vapor is delivered to a condensor means liquefying said fuel vapor, said condensor cooled by moving air, the liquid fuel output of said condensor being delivered to a fuel storage tank. Said drain valve being controlled by a cycle timer having a preselected cycle period, said timer being enabled whenever said thermostat means indicates the temperature in said distillation vessel exceeds a first preselected threshold, said cycle timer actuating said valve to empty said distillation vessel at the end of each cycle and resetting, allowing said vessel to be refilled and said cycle period to restart.

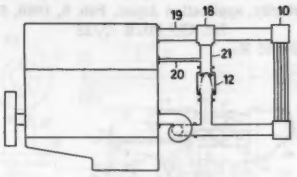
4,364,338

CIRCUIT OF THE COOLANT IN INTERNAL COMBUSTION ENGINES FOR IMPROVING ENGINE OPERATION AFTER COLD STARTING

Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed Oct. 22, 1979, Ser. No. 87,383
Claims priority, application Italy, Oct. 31, 1978, 29341 A/78
Int. Cl.³ F01P *7/16*
U.S. Cl. 123—41.10 **3 Claims**

1. A circuit of the coolant of an internal combustion engine, specially for a motor vehicle, said circuit comprising cavities in the interior of said engine to be filled and wiped with said coolant, a radiator for the cooling of said coolant, a circulating pump of the centrifugal type for said coolant, said circulating pump being driven by a main shaft of said engine and having a delivery duct connected with an inlet hole of said engine cavities, a first conduit connected at one end with an outlet hole of said engine cavities and at its other end with said radiator, a thermostratic threeway valve inserted in said first conduit, a second conduit connected at one end with said thermostatic threeway valve, a third conduit between said radiator and said



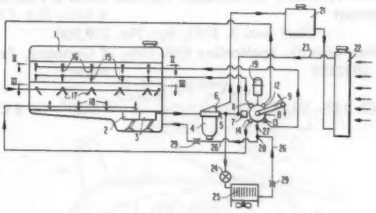
circulating pump, said second conduit being connected at its other end with said third conduit, a second valve having means for closing said second valve automatically in response to limited power engagements of the engine, a fourth conduit of smaller cross-section connected at one end with said engine cavities and at its other end with said second conduit in its portion upstream of said second valve, said fourth conduit providing means for a circulation of said coolant through said thermostatic valve while said engine is still cold.

4,364,339

INTERNAL COMBUSTION ENGINE WITH COOLING SYSTEM

Ludwig Fricker, Stuttgart, and Jörg Abthoff, Plüderhausen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 29, 1979, Ser. No. 89,094
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1978, 2847057
Int. Cl.³ F01P *3/02*
U.S. Cl. 123—41.42 **4 Claims**



1. A piston internal combustion engine with at least one cylinder means, a combustion chamber, a cooling system which operates with a cooling medium, the cooling system being coordinated to the cylinder means, and a continuously operating lubricating oil circulation system, characterized in that the cooling system includes an oil spray cooling means, means are provided for disconnecting a portion of the oil spray cooling means during a partial load operation of the engine so as to reduce the cooling ouptut of the cooling system and thereby increase the heat content in the combustion chamber so that specific fuel consumption is rendered and a warm-up period of the engine after a start of the engine is reduced, the spray oil cooling means are operable to be selectively disconnected and reconnected, a portion of the oil spray cooling means operable to be disconnected is operatively connected in

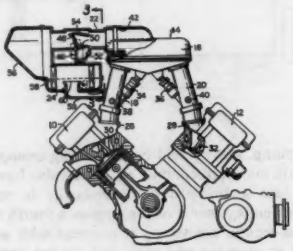
parallel with the continuously operating lubricating oil circulatory system, and in that the means for disconnecting the oil spray cooling means is a valve means actuatable by engine suction pressure as a function of a load of the engine.

4,364,340

VEHICULAR ENGINE

Hiroshi Kimura, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jan. 23, 1981, Ser. No. 227,660
Claims priority, application Japan, Feb. 8, 1980, 55-15096
Int. Cl.³ F02B *75/22*
U.S. Cl. 123—55 R **5 Claims**



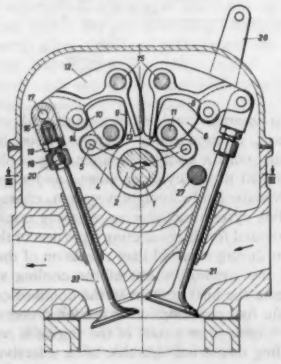
1. In combination with a motorcycle having a frame, a fuel tank at an upper elevation on said frame, and a V-type fuel injection type engine mounted to said frame beneath said fuel tank, said engine having a pair of cylinders forming a V, with intake ports inside said V, an induction system comprising: a pair of mixing bodies, each rising from a respective one of said intake ports; a surging tank above and discharging into said mixing bodies, said surging tank being disposed beneath said fuel tank and above said engine; an air intake passage disposed at the side of said surging tank; and an air flow meter in said air intake passage.

4,364,341

VALVE CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Teodoro Holtmann, Elfriedenstr. 27, 4300 Essen 1, Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 270,956
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1980, 3022188
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.17 **8 Claims**



1. In a valve control system in cylinders of an internal combustion engine, particularly for high-speed automotive engines, for the continuous adjustment of valve control times and valve strokes in accordance with the speed of rotation and/or load of the engine, having an eccentric shaft arranged in a cylinder head of the engine common to intake and exhaust valves, to which shaft there are pivoted connected rods which point in opposite directions transverse to the longitudinal axis of the eccentric shaft and which operatively drive valve rockers acting on the intake and exhaust valves, the improvement comprising

a pair of said intake and exhaust valves per cylinder,

said eccentric shaft has only one eccentric thereon per cylinder, two of said connecting rods for operatively driving said intake valve and the exhaust valve of said cylinder respectively are jointly mounted on said one eccentric,

a double-acting swing cam means is operatively pivotally coupled to each said connecting rod, respectively, each said swing cam means being for positive control of the valve associated therewith in both directions of swing thereof via respective of the valve rockers,

each of the valve rockers being formed with a fork-shaped section in form-locked engagement with an associated of said swing cam means, each said valve rockers being operatively pivoted to the associated valve, respectively,

said two connecting rods form an angle of less than 180 degrees between longitudinal axes respectively thereof extending through a center point of said eccentric and an operative pivot point of said connecting rods to said swing cam means, respectively,

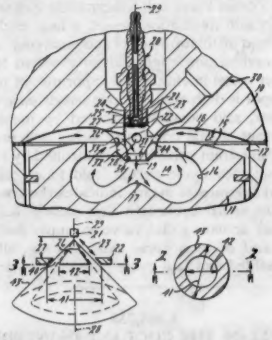
means for displacing the eccentric shaft transversely to the longitudinal axis of said eccentric shaft in such a manner that the distances between said eccentric shaft and pivot axes of said two swing cams are simultaneously changed upon a change in the position of the eccentric shaft.

4,364,342

IGNITION SYSTEM EMPLOYING PLASMA SPRAY

Joseph R. Asik, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 1, 1980, Ser. No. 192,666
Int. Cl.³ F02B *17/00, 19/08*
U.S. Cl. 123—143 B **12 Claims**



1. An ignition system for a stratified charge internal combustion engine, said engine having at least one combustion chamber and fuel injection means effective to inject fuel in a conical spray pattern into a predetermined zone of said combustion chamber for establishing a stratified charge, the system comprising:

(a) walls defining an air filled plasma ionizing chamber having an outlet orifice;

(b) electrical discharge means having only two electrodes and being effective to apply a high energy electrical dis-

charge of at least 200 millijoules for at least two seconds across the plasma ionizing chamber causing the contents thereof to be shock heated to an ionized condition and released through said outlet orifice as a jet; and

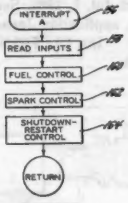
(c) means interrupting said outlet orifice to form said plasma jet into a hollow cone and to direct said hollow conical jet into said zone of said injected fuel.

4,364,343

AUTOMATIC ENGINE SHUTDOWN AND RESTART SYSTEM

Marvin J. Malik, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 8, 1981, Ser. No. 261,704
Int. Cl.³ F02N *17/00*
U.S. Cl. 123—179 B **3 Claims**



1. An automatic shutdown and restart system for a vehicle internal combustion engine having an intake space from which fuel and air are drawn into a combustion space to undergo combustion, a manually operable engine control member for providing operator control of engine speed, and a starter motor, the system comprising:

means effective to supply fuel to the intake space;

means effective to ignite the fuel and air mixture drawn into the combustion space;

means effective to sense engine rotational speed;

shutdown means responsive to one characteristic of the engine control member, the shutdown means being effective to (a) disable the fuel supply means from supplying fuel to the intake space to effect engine shutdown and to (b) re-enable the fuel supply means and disable the ignition means when the engine rotational speed decreases to a predetermined value to charge the intake space with a combustible mixture; and

restart means responsive to a second characteristic of the engine control member effective to (a) energize the starter motor to effect restart of the internal combustion engine and (b) deenergize the starter motor when the engine rotational speed represents the engine has started, whereby the charging of the intake space with a combustible mixture during engine shutdown is effective to provide a combustible mixture that is drawn into the combustion space when restart is initiated to effect immediate restart of the internal combustion engine.

4,364,344

INTERNAL COMBUSTION ENGINE WITH INITIAL IGNITION SUPPRESSION DURING CRANKING

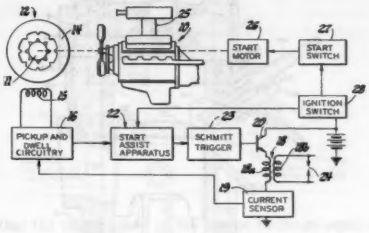
Earl H. Buetemeister, Alexandria, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 11, 1981, Ser. No. 262,314
Int. Cl.³ F02N *17/00*; F02P *5/04*
U.S. Cl. 123—179 BG **3 Claims**

1. In a multi-cylinder internal combustion engine having a rotating crankshaft, a piston in each of the cylinders coupled to the crankshaft in rotational driving relationship, means effective to deliver fuel charges to the respective cylinders at predetermined times, means effective to normally ignite the fuel charges in the respective cylinders in response to ignition signals at predetermined times in advance of top dead center in the respective cylinders and means effective to start the engine by independent rotation of the crankshaft, the improvement comprising:

counting means effective during initial actuation of the engine start means to count a predetermined number of said ignition signals;

means effective, while the counting means is counting, to prevent ignition in the respective cylinders, whereby



crankshaft rotational speed is allowed to increase without reverse torque due to ignition cylinder pressure buildup before top dead center; and

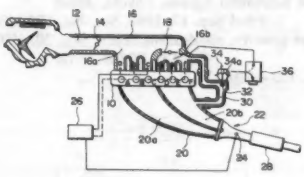
means responsive to the counting means reaching the predetermined count to restore ignition in the respective cylinders, whereby the pistons are enabled to drive the crankshaft after crankshaft rotational speed is sufficient to maintain engine operation with ignition events before top dead center.

4,364,345

SPLIT TYPE INTERNAL COMBUSTION ENGINE

Saburo Tsutsumi, Yokohama, and Yasuhiko Nakagawa, Kamakura, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Dec. 10, 1980, Ser. No. 215,081
Claims priority, application Japan, Dec. 12, 1979, 54-161085
Int. Cl.³ F02D *17/02*
U.S. Cl. 123—198 F **3 Claims**



1. An internal combustion engine including first and second cylinder units each having at least one cylinder, first intake and exhaust valve means associated with said first cylinder unit, second intake and exhaust valve means associated with said second cylinder unit, and means for disabling said second cylinder unit when the engine load is below a predetermined value, said engine comprising:

(a) first valve operating means for operating said first intake and exhaust valve means with a first amount of valve overlap; and

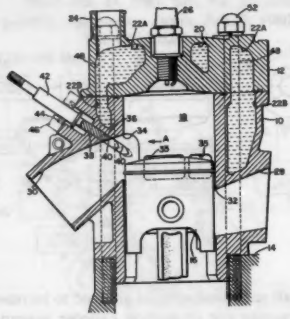
(b) second valve operating means for operating said second intake and exhaust valve means with a second amount of valve overlap relatively larger than said first valve overlap amount.

4,364,346

EXHAUST TIMING CONTROL DEVICE FOR A TWO-CYCLE ENGINE

Masakazu Shiohara, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 22, 1980, Ser. No. 219,328
Claims priority, application Japan, Dec. 27, 1979, 54-170869
Int. Cl.³ F02B *75/02, 25/06*
U.S. Cl. 123—323 **3 Claims**



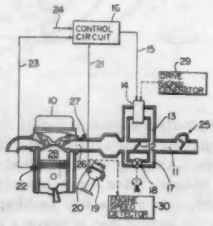
1. In an internal combustion engine having a cylinder with a cylindrical inner wall, a cylinder axis, a cylinder head, and a piston slidably fitted in said cylinder, thereby to form a combustion chamber, said inner wall having an exhaust port opening into said chamber, an exhaust passage departing laterally from said exhaust port, said passage having a passage wall, exhaust timing means comprising: said wall of said exhaust port having a valve hole formed at an oblique angle to said cylinder axis and opening into said exhaust passage adjacent to said exhaust port, a valve member slidably fitted in said valve hole for movement therein at said angle so as to be withdrawable toward the wall of said exhaust passage, and to be extendible to approach said exhaust port at an elevation lower than the upper edge of said exhaust port.

4,364,347

METHOD OF ADJUSTING IDLE SPEED OF AN INTERNAL COMBUSTION ENGINE

Hideo Miyagi, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 17, 1980, Ser. No. 188,213
Claims priority, application Japan, Sep. 20, 1979, 54-120026
Int. Cl.³ F02M *23/06*
U.S. Cl. 123—339 **5 Claims**



1. A method of adjusting the idle speed of an internal combustion engine having an intake passage, a throttle valve in the intake passage, main and second bypass passages, each of which separately communicates with the intake passage so as to bypass the throttle valve, flow rate adjustment means in said second bypass passage, and flow rate control means in said main bypass passage, the opening degree of said flow rate control means being controlled in accordance with the rotational speed of the engine, said method comprising the steps of:

applying a drive signal having a predetermined fixed value independent of the actual rotational speed of the engine to the flow rate control means so as to operate the engine at a speed above its lowest operating speed; and

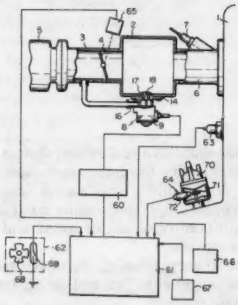
while the flow rate control means is energized by said drive signal, adjusting the flow rate adjustment means so that the actual rotational speed of the engine becomes equal to a desired idling speed.

4,364,348

METHOD AND APPARATUS FOR CONTROLLING THE IDLING SPEED OF AN ENGINE

Hiroshi Itoh, Nagoya, and Nobuyuki Kobayashi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 1, 1981, Ser. No. 279,515
Claims priority, application Japan, Jan. 23, 1981, 56-8147
Int. Cl.³ F02N *17/00*
U.S. Cl. 123—339 **21 Claims**



1. A method of controlling the idling speed of an engine comprising a main intake passage, a throttle valve arranged in the main intake passage, a bypass passage branched off from the main intake passage upstream of the throttle valve and connected to the main intake passage downstream of the throttle valve, a control valve arranged in the bypass passge, and a stepper motor actuating the control valve for controlling the amount of air flowing within the bypass passage, wherein said method comprises:

determining a first stepper motor position related to the temperature of a coolant of the engine;

determining the speed of the engine;

rotating the stepper motor at a first speed from an initial position wherein the control valve is opened to said first position for reducing a flow area of the bypass passage when the engine is started and the speed of the engine exceeds a predetermined speed; and

increasing said predetermined speed as the temperature of the coolant of the engine is reduced.

4,364,349

METHOD FOR CONTROLLING THE OPERATION OF THE FUEL INJECTOR IN A FUEL INJECTION TYPE INTERNAL COMBUSTION ENGINE DURING A DECELERATION CONDITION OF THE ENGINE

Hideo Miyagi, Okazaki, and Toshio Suematsu, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 24, 1981, Ser. No. 286,665
Claims priority, application Japan, Sep. 17, 1980, 55-127876
Int. Cl.³ F02D *11/10, 31/00*
U.S. Cl. 123—339 **7 Claims**

1. Method for operating a fuel injector device in a computer

controlled fuel injection type internal combustion engine during a fully closed position of throttle valve of the engine in which idling engine speed is controlled so that it is maintained to N_F, said method comprising the steps of:

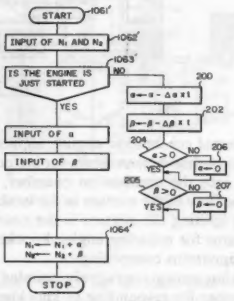
(a) storing, in a memory unit of the electrical computer, a value corresponding to a first rotational speed N_1;

(b) storing, in the memory unit, a value corresponding to a second rotational speed N_2 which is smaller than N_1 and is larger than the idling rotational speed N_F;

(c) storing, in the memory unit, a value corresponding to an increase α in the first rotational speed N_1;

(d) storing, in the memory unit, data corresponding to an increase β in the second rotational speed of the engine N_2;

(e) detecting whether a predetermined period has lapsed or not from the start of the engine;



(f) producing an electrical signal for stopping the operation of the fuel injector device when said period has not lapsed and when the rotational speed of the engine N is larger than N_1 plus α;

(g) producing an electrical signal for operating the fuel injector device when said period has not lapsed and when the rotational speed of the engine N is smaller than N_2 plus β;

(h) producing the electrical signal for stopping the operation of the fuel injector when the period has lapsed and when the rotational speed of the engine N is larger than N_1;

(i) producing the electrical signal for operating the fuel injector when the period has lapsed and when the rotational speed of the engine N is smaller than N_2;

(j) repeating the above mentioned steps during fully closed position of the throttle valve of the engine.

4,364,350

METHOD OF CONTROLLING THE IDLING SPEED OF AN ENGINE

Nobuyuki Kobayashi, Toyota, and Hiroshi Itoh, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 13, 1981, Ser. No. 292,534

Claims priority, application Japan, Jan. 23, 1981, 56-8142; Jan. 23, 1981, 56-8143; Jan. 26, 1981, 56-8937

Int. Cl.³ F02D *11/10*

U.S. Cl. 123—339 **12 Claims**

1. A method of controlling the idling speed of an engine comprising a main intake passage, a throttle valve arranged in the main intake passage, a bypass passage branched off from the main intake passage upstream of the throttle valve and connected to the main intake passage downstream of the throttle valve, a control valve arranged in the bypass passage, and a step motor actuating the control valve for controlling the amount of air flowing within the bypass passage, wherein said method comprises:

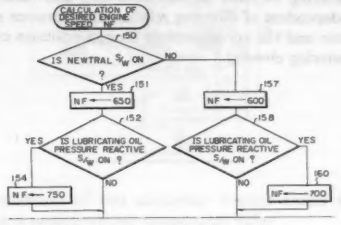
detecting the idling speed of the engine;

detecting the pressure of a lubricating oil of the engine;

detecting the temperature of a coolant of the engine;

controlling the rotating motion of the step motor so that the idling speed of the engine becomes equal to a predetermined base speed when said lubricating oil pressure is higher than a predetermined pressure and when said coolant temperature is lower than a first predetermined temperature;

rotating the step motor in a rotating direction wherein the control valve increases a flow area of the bypass passage



so that the idling speed of the engine becomes equal to a predetermined pressure control speed which is higher than said predetermined base speed when said lubricating oil pressure becomes lower than said predetermined pressure, and;

rotating the step motor so that the idling speed of the engine becomes equal to a predetermined temperature control speed when said coolant temperature becomes higher than said first predetermined temperature.

4,364,351

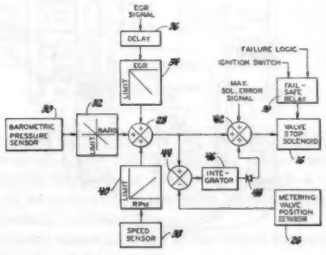
DIESEL ENGINE FUEL LIMITING SYSTEM

Edward R. Romblom, DeWitt, and Arthur R. Sundeen, Lansing, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 18, 1981, Ser. No. 264,690

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—357 **3 Claims**



1. A system for limiting the maximum fuel quantity admitted to a diesel engine comprising, in combination:

a variable position fuel metering element for controlling the fuel quantity admitted to the engine;

means effective to position the fuel metering element in accord with predetermined engine operating parameters;

a variable position stop effective to limit the position of the fuel control metering element in the fuel increasing direction;

means effective to generate a fuel limit signal representing a maximum allowable position of the fuel control metering element corresponding to a maximum allowable fuel quantity to be admitted to the engine;

means effective to generate a position signal representing the

position of the fuel control metering element and therefore the actual fuel quantity admitted to the engine; and

control means effective to position the stop in accord with the difference between the maximum allowable position of the fuel control metering element represented by the fuel limit signal and the actual position of the fuel control metering element represented by the position signal, whereby when the fuel metering element is moved to the maximum allowable position, the stop is moved by the control means to a position to limit the position of the fuel metering element at the maximum allowable position independent of differing relationships between stop positions and the corresponding limited positions of the fuel metering element.

4,364,352

CARBURETOR CONTROL ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE

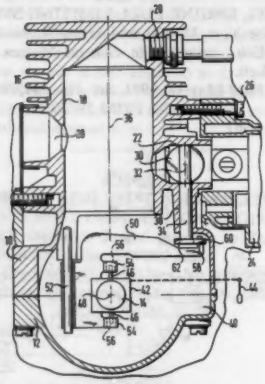
Kurt Diuhosch, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,575

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 7934941[U]

Int. Cl.³ F02D *31/00, 9/08*

U.S. Cl. 123—376 3 Claims



1. In an internal combustion engine including cylinder block means defining integrally therewith intake port means, crankcase means defining a cavity receiving a crankshaft, a carburetor mechanism attached to said cylinder block means in flow communication with said intake port means, throttle valve means within said intake port means, control means for controlling said throttle valve means, and mechanical transmission means connecting said control means and said throttle valve means, the improvement comprising that said control means are housed completely within said cavity of said crankcase means and are responsive to the number of revolutions of said crankshaft, said transmission means being arranged through a passage within said cylinder block means toward said cavity such that all of the parts of said transmission means and said control means are located completely within the interior of said cylinder block means and said cavity.

4,364,353

ANTI-KNOCKING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

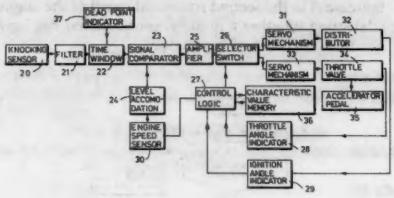
Ernst Fiala, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 219,352

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951321

Int. Cl.³ F02P *5/14;* F02D *9/00*

U.S. Cl. 123—425 1 Claim



1. In an internal combustion engine, including means defining a combustion chamber, an intake for introducing a combustible mixture into the combustion chamber, a throttle valve controlling the flow of the mixture in the intake; ignition means for externally igniting the mixture in the combustion chamber and an apparatus for reducing engine knocking; the improvement in said apparatus comprising:

(a) a knocking sensor operatively coupled to said combustion chamber for responding to knocking therein and for emitting signals representing the knocking;

(b) an ignition shifting device connected to said ignition means for shifting the moment of ignition in a delaying sense;

(c) a valve moving device connected to said throttle valve for moving said throttle valve in a closing sense; and

(d) control means connected to said knocking sensor, said ignition shifting device and said valve moving device for effecting actuation solely of said ignition shifting device up to a maximum predetermined delay in ignition when signals from said knocking sensor are received and for effecting actuation solely of said valve moving device after said maximum predetermined delay has been reached and upon continued receipt of signals from said knocking sensor.

4,364,354

AIR-FUEL RATIO CONTROLLER FOR CARBURETOR

Tokuo Kosuge; Takeshi Atago, and Kimiji Karino, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,847

Claims priority, application Japan, Dec. 28, 1979, 54-170863

Int. Cl.³ F02B *33/00;* G05B *15/02;* F02M *7/06*

U.S. Cl. 123—437 10 Claims

1. In a carburetor of the type having a primary intake passage which operates during normal running of said engine and a secondary intake passage which operates at high-speed operation of said engine, having a main fuel system for supplying a fuel from a float chamber into a venturi formed upstream of a throttle valve rotatably disposed in the primary intake passage, a main fuel control valve disposed in said main fuel system for controlling the flow rate of fuel flowing through said main fuel system so as to converge to a target air-fuel ratio based on a normal running parameter representing a normal running condition of an internal combustion engine, a slow fuel system for supplying the fuel from said float chamber into a portion of the primary intake passage adjacent to said throttle valve, and a slow fuel control valve disposed in said slow fuel system for controlling the flow rate of fuel flowing through said slow fuel system so as to converge to said target air-fuel ratio based on

said normal running parameter, an air-fuel mixture being formed by the fuel from both of said main and slow fuel systems and air flowing through said intake passage;

an air-fuel ratio controller comprising:

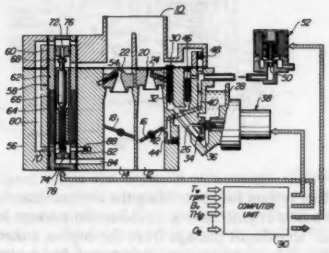
(a) an auxiliary fuel passage communicating said float chamber and a portion of said secondary intake passage downstream of said throttle valve with each other;

(b) an auxiliary air passage supplying air into said auxiliary fuel passage;

(c) an auxiliary fuel control valve for controlling the flow rate of fuel flowing through said auxiliary fuel passage;

(d) an auxiliary air control valve for controlling the flow rate of air passing through said auxiliary air passage; and

(e) an electromagnetic actuator operated by duty-controlled



ON-OFF pulses based on at least one of a starting-up/warming-up parameter representing a starting-up/warming-up running condition of the internal combustion engine and a deceleration parameter representing a decelerating running condition of the engine, for controlling said auxiliary fuel control valve and said auxiliary air control valve so as to gradually decrease the flow rate of fuel flowing through said auxiliary fuel passage and gradually increase the flow rate of air flowing through said auxiliary air passage as said at least one running condition proceeds, and to deactivate said actuator for halting or suspending the supply of the fuel and the air from said auxiliary fuel passage and said auxiliary air passage when said at least one parameter indicates that said running condition is completed.

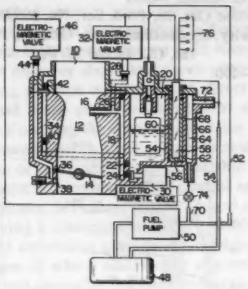
4,364,355

ELECTRONICALLY CONTROLLED FUEL SUPPLY APPARATUS FOR INTERNAL COMBUSTION ENGINE

Kimiji Karino, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 11, 1980, Ser. No. 168,780
Claims priority, application Japan, Jul. 18, 1979, 54-90383
Int. Cl.³ F02B *33/00*
U.S. Cl. 123—438 **9 Claims**

1. An electronically controlled fuel supply apparatus for an internal combustion engine, comprising: sensors for deriving operation parameters of said engine in the form of electric signals; electronic control means for deriving a quantity of fuel to be supplied to said engine on the basis of the input signals produced from said sensors; fuel supply means for controlling accurately the fuel quantity in dependence on a signal produced from said electronic control means and representing the fuel quantity to be supplied to the engine, the fuel supply means including fuel injection means; a fuel tank from which the fuel is supplied to said fuel supply means; a container for accommodating therein said electronic control means; a fuel circulating chamber formed integrally with said container; first and second pipes for communicating said fuel circulating chambers and said fuel tank to each other; a fuel pump disposed in said first pipe at an intermediate portion thereof; and a temperature responsive valve disposed in either said first or second pipe, said temperature responsive valve being adapted to be closed



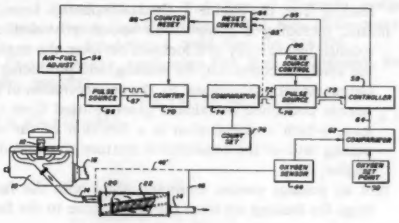
when temperature of said electronic control means is not higher than a predetermined temperature value.

4,364,356

EXHAUST EMISSIONS CONTROL SYSTEM

Clarence G. Gerhold, Palatine, Ill., assignor to UOP Inc., Des Plains, Ill.

Continuation-in-part of Ser. No. 286,650, Sep. 5, 1972, Pat. No. 3,797,301. This application Jan. 25, 1974, Ser. No. 436,559
Int. Cl.³ F02P *3/00*
U.S. Cl. 123—440 **4 Claims**



1. In an engine system wherein fuel and air are admixed and combusted in an engine and the resulting exhaust gases containing harmful components are passed through a catalytic converter to be converted to generally harmless components, the improvement comprising:

(a) adjustment means attached to the engine for varying the fuel-air ratio of the engine;

(b) oxygen sensing means mounted in the exhaust path of the engine for generating an electrical signal in accordance with the percentage of oxygen present in the exhaust gases at that point;

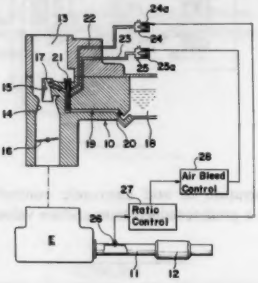
(c) control means for comparing the electrical signal produced by said oxygen sensing means to a predetermined set point and causing said adjustment means to be actuated to a first fixed position when said electrical signal differs from the value corresponding to said set point; and

(d) delay means including means for sensing a predetermined number of revolutions of the engine for preventing said control means from further actuating said adjustment means until the changes in the fuel-air ratio caused by adjusting the adjustment means to said first fixed position are reflected in the composition of the exhaust gases at the oxygen sensor position in the exhaust path.

4,364,357
AIR-FUEL RATIO CONTROL SYSTEM

Tsutomu Matsuoka, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Oct. 20, 1980, Ser. No. 199,041
Claims priority, application Japan, Oct. 20, 1979, 54-135768
Int. Cl.³ F02M 23/04
U.S. Cl. 123—440 10 Claims



1. An air-fuel ratio control system for providing a required amount of air to a carburetor of an internal combustion engine, the carburetor having fuel passage means, including a fuel passage and means for receiving air from the atmosphere into the fuel passage, mixing fuel from the fuel passage with the air for forming a combustible air-fuel mixture, which air-fuel ratio control system comprises:

a catalytic convertor installed on an exhaust passageway leading from the engine to the atmosphere;

means, including a composition sensor provided on the exhaust passageway at a location between the engine and the catalytic convertor, for sensing, and producing a first output signal proportional to, the concentration of a component contained in exhaust gases emitted from the engine, which concentration is a function of the air-fuel mixing ratio of the combustible mixture combusted in the engine;

first air passage means, communicating with the fuel passage, for feeding air from the atmosphere to the fuel passage;

first actuator means for controlling the flow of air fed into the fuel passage through said first air passage means;

means, responsive to said first output signal, for producing a second output signal representative of an amount of air required in said fuel passage to obtain a desired air-fuel ratio of said air-fuel mixture;

duty ratio control means, responsive to said second output signal, for controlling the duty ratio of said first actuator means;

second air passage means, communicating with the atmosphere, for feeding additional air from the atmosphere to the fuel passage;

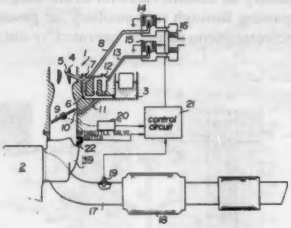
second actuator means for opening and closing said second air passage means for controlling the flow of additional air fed into the fuel passage by said second air passage means; and

air bleed control means, responsive to said second output signal, for controlling said second actuator means to open said second air passage means to permit the flow of air to the fuel passage through said second air passage means together with the air flowing through said first air passage means when said second signal reaches a level indicating that the required amount of air exceeds a predetermined value.

4,364,358
AIR-FUEL RATIO CONTROL SYSTEM

Makoto Shikata, Musashimurayama, and Fujio Matsui, Musashino, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Jan. 9, 1981, Ser. No. 223,678
Claims priority, application Japan, Jan. 10, 1980, 55-1557
Int. Cl.³ F02B 3/00
U.S. Cl. 123—440 8 Claims



1. In a system for controlling the air-fuel ratio for an internal combustion engine having an induction passage leading to the engine, an exhaust passage from the engine, a throttle valve in the induction passage, detecting means for detecting the concentration of a constituent of exhaust gases passing through said exhaust passage, air-fuel mixture supply means for supplying air-fuel mixture to the induction passage, electromagnetic valve means for correcting the air-fuel ratio of the air-fuel mixture supplied by said air-fuel mixture supply means, comparator means for comparing the output signal of said detecting means with a predetermined value, integrating circuit means having an integrating circuit for integrating the output of said comparator means, and driving circuit means for driving said electromagnetic valve means in dependency upon the output signal of said integrating circuit means, the improvement comprising

a throttle valve switch,

a first means operatively connecting said throttle valve switch to said throttle valve for actuating said throttle valve switch in dependency on the position of said throttle valve,

a vacuum switch,

a second means communicating with said induction passage so as to be operated by the vacuum pressure in said induction passage for actuating said vacuum switch when said throttle valve is opened to a predetermined degree,

switching circuit means for changing the circuit constant of said integrating circuit, and

decision circuit means responsive to operations of said throttle valve switch and said vacuum switch for actuating said switching circuit means, so that said circuit constant is changed in a steady state of the engine compared with idling operation.

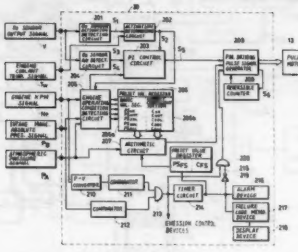
4,364,359
CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, HAVING FUNCTION OF DETECTING ABNORMALITIES IN ENGINE SPEED SIGNAL DETECTING SYSTEM

Kazuo Otsuka, Higashikurume; Shin Narasaka, Yono, and Shumpei Hasegawa, Niiza, all of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1981, Ser. No. 290,847
Claims priority, application Japan, Aug. 14, 1980, 55-112522
Int. Cl.³ F02G 3/00; F02M 7/00
U.S. Cl. 123—440 6 Claims

1. A control system for controlling an internal combustion engine having an intake pipe, which comprises: a first sensor

for detecting pressure in said intake pipe of said engine to produce an output indicative of said pressure; a second sensor for detecting the rotational speed of said engine to produce an output indicative of said rotational speed; a first circuit responsive to said output of said first sensor for producing a first signal when the value of said output of said first sensor is smaller than a first predetermined value; a second circuit responsive to said output of said second sensor for producing a



second signal when the value of said output of said second sensor is smaller than a second predetermined value; and a timer associated with said first circuit and said second circuit, for producing a third signal when there is concurrence of said first signal and said second signal lasting for a predetermined period of time; wherein said first predetermined value and said second predetermined value are set such that they are incompatible with each other when said engine is in a normal operating state.

4,364,360

FUEL INJECTION SYSTEM FUNCTIONING WITH PUMP/NOZZLES

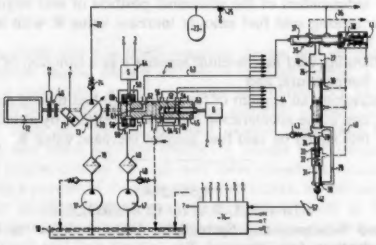
Franz Eheim, Stuttgart, and Gerald Höfer, Weissach-Flacht, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 15, 1981, Ser. No. 225,165

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1980, 3001154

Int. Cl.³ F02M *41/00*

U.S. Cl. 123—450 **10 Claims**



1. A fuel injection system for internal combustion engines comprising a plurality of pump/nozzles a high pressure servo fluid source,

(a) each said pump/nozzle including a servo piston, said servo piston including a large diameter portion and a small diameter portion, a pump work chamber below said small diameter portion and a servo pressure chamber above said large diameter portion, said servo pressure chamber receiving via a servo pressure line servo fluid from said high pressure servo fluid source for driving said servo piston;

(b) a control fluid source, a, control apparatus for injection onset which controls the servo fluid from said servo fluid source to said servo pressure chamber for driving said servo piston in proportion to the stroke of the engine; said control apparatus including a hydraulically driven switchover valve, said switchover valve being driven by means of a control fluid delivered via a control line from said control fluid source, said switch-over valve being arranged in one switching position to direct said servo fluid from said high pressure servo fluid source to said servo pressure chamber above said servo piston and in another switching position is arranged to direct the servo fluid from said servo pressure chamber to a relief line, the instant of opening the servo pressure line leading from the high pressure servo fluid source to said servo pressure chamber of said pump nozzle is variable from a variation of the injection instant by said control apparatus;

(c) a distributor device serving to control said control fluid and having a rotating distributor provided with a jacket face and distributor grooves disposed in said jacket face by means of which said source of control fluid is connected and thereafter disconnected during one rotation in sequence with and from said control lines leading to said switch over valves of said pump/nozzle; a fuel metering apparatus arranged to determine the fuel quantity of the fuel to be injected and storing up said fuel into said pump work chamber below said pump piston, characterized in that the flow of said control fluid to said switchover valve is controlled by means of said distributor device via control locations disposed between said distributor and a rotatable annular slide which surrounds said distributor, whereby injection onset is varied by rotation of said annular slide by means of a servomotor, and wherein said fuel metering apparatus includes a supply volume controllable positive-displacement piston pump.

4,364,361

FUEL INJECTION SYSTEM

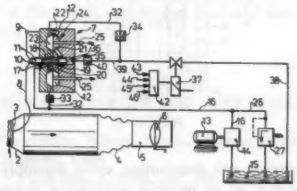
Konrad Eckert, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 4, 1980, Ser. No. 118,016

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1979, 2906597

Int. Cl.³ F02M *69/00*

U.S. Cl. 123—453 **8 Claims**



1. A fuel injection system for internal combustion engines comprising a suction tube in which a metering member and an arbitrarily actuatable throttle valve are disposed in series with one another and wherein said metering member is displaced by flowing air depending on the air flow rate in opposition to a resetting force a fuel supply line, a metering valve disposed in said fuel supply line said metering valve including a movable valve member, an actuating element connected to said metering member for displacing said movable valve member for the purpose of metering out a fuel quantity in proportion to the air quantity, said metering valve including a pressure chamber into which projects an effective face of said movable valve member of said metering valve, means for supplying fuel to said pressure chamber in said metering valve for producing a resetting force on said effective face of said movable valve member whereby a metering operation is carried out under a constant pressure difference which can be varied as a function of the operating parameters of the internal combustion engine,

a regulatory valve means, said regulatory valve means including movable valve elements, having first and second sides arranged to adjust a pressure difference at the metering valve such that the first side is biased by fuel pressure downstream of the metering valve and the second side is biased by pressure in a control pressure line wherein said control pressure line is connected to the regulating valve and said pressure chamber in said metering valve into which projects the effective face of the movable valve member and wherein the pressure in said control pressure line may be varied by varying the pressure difference of at least a first throttle by means of an electromagnetic valve which is disposed in said control pressure line and which is controllable as a function of a plurality of operating parameters and wherein the electromagnetic valve is connected to simultaneously vary the pressure difference at the metering valve and alter the resetting force to the movable member.

4,364,362

METERING AND DISTRIBUTION VALVE ASSEMBLY

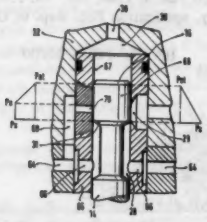
Michael Wissmann, Gerlingen, and Peter Stiefel, Ditzingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 23, 1981, Ser. No. 227,867

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1980, 3002458

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—454 **6 Claims**



1. A metering and distribution valve assembly for a fuel injection system of an internal combustion engine having a housing; a slotted sleeve in said housing; a control slide with a control edge axially movable in said slotted sleeve; said slotted sleeve including at least two control slits embodied therein which upon relative movement between the control slide and the slotted sleeve said control slits are opened to a greater or lesser degree by the control edge of said control slide; a system pressure valve for regulating a system pressure of fuel engaging the control edge of said control sleeve; said control slide including an end face adjacent said control edge which is exposed to fuel having a control pressure which is lower than the system pressure; at least one control pressure valve for controlling the control pressure; the said control slide including a cylindrical control slide head formed between the control edge and the end face whereby the pressure drops at the circumference of said control slide head is capable of being influenced in such a manner that said control slide head rests on one side against the slotted sleeve at least during a portion of the displacement movement.

4,364,363

ELECTRONICALLY CONTROLLING, FUEL INJECTION METHOD FOR INTERNAL COMBUSTION ENGINE

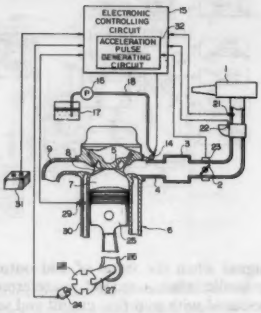
Hideo Miyagi, and Jiro Nakano, both of Okazaki, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 16, 1980, Ser. No. 150,353

Claims priority, application Japan, Jan. 18, 1980, 55-3674

Int. Cl.³ F02D *5/00*

U.S. Cl. 123—492 **18 Claims**



1. An electrically controlled, fuel injection method for an internal combustion engine, comprising the steps of:

generating an electric fuel signal related to a desired opening-duration of a fuel injection valve during a running mode of said engine;

transmitting said fuel signal to said valve, thereby controlling an amount of fuel being supplied into combustion chambers;

generating, on the basis of one of a throttle valve opening speed and a speed of increasing flow rate of air, at least one acceleration indication each time a commanded degree of acceleration exceeds a predetermined value independent of the position of a throttle valve in an intake system of said engine prior to a generation of said acceleration indication;

increasing a fuel amount increase value R by an incremental amount r in response to each acceleration indication independent of the previous fuel amount increase value R and independent of the rotational position of said engine;

decreasing said fuel amount increase value R with lapse of time;

changing said incremental amount r as a function of engine temperature; and

increasing an amount of fuel being supplied during acceleration in the acceleration mode of the engine by altering said fuel signal by said fuel amount increase value R.

4,364,364

AIR-FUEL RATIO CONTROLLER

Anand Subramaniam, Springfield, Ohio, assignor to Cooper Industries, Inc., Houston, Tex.

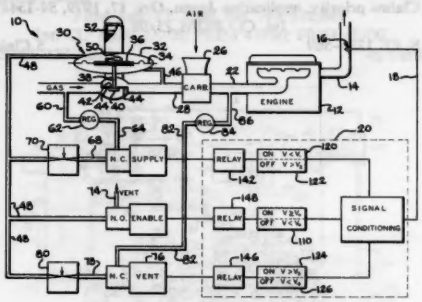
Filed Jul. 23, 1981, Ser. No. 286,268

Int. Cl.³ F02M *51/02*

U.S. Cl. 123—527 **17 Claims**

1. An air-fuel control system for a gaseous fuel internal combustion engine having a carburetor and an exhaust manifold comprising, in combination, means for sensing the oxygen content in the gases in said exhaust manifold, means for providing a temperature compensated electrical signal representative of said sensed oxygen content, a pressure regulator means for controlling the pressure of such gaseous fuel supplied to such carburetor, said regulator means including a housing, a diaphragm disposed within said housing and defining an upper and a lower chamber above and below said diaphragm, respec-

tively, said lower chamber communicating with such gaseous fuel supplied to such carburetor, a first control valve communicating between such gaseous fuel supplied to said pressure regulator and said upper chamber of said regulator means, means for opening said first valve in response to an increase in the oxygen content of such gases in such exhaust manifold, and



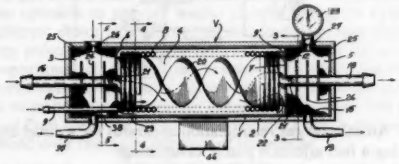
a second control valve communicating between said upper chamber of said regulator means and a source of pressure below the pressure of such gas supplied to said pressure regulator and means for opening said second valve in response to a decrease in the oxygen content of such gases in such exhaust manifold.

4,364,365

FUEL VAPORIZER FOR INTERNAL COMBUSTION ENGINE

Rejean Gendron, 169 chemin Baie Carriere, Val d'Or, Abitibi, Canada (J9P 4M5)

Filed Jun. 2, 1980, Ser. No. 155,360
Int. Cl.³ F02M *31/02*
U.S. Cl. 123—557 **10 Claims**



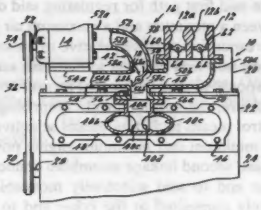
1. In combination, a fluid vaporizer device and an internal combustion engine having an engine coolant circuit, a fuel pump, a carburator, an air intake for said carburator located upstream of the latter, and an intake manifold located downstream from said carburator, said device comprising first, second and third separate chambers, means for circulating heated engine coolant through said three chambers, means for bleeding a portion of the air from said air intake, for circulating said air portion through said first chamber while in heat-exchange relationship with the heated engine coolant circulating through said first chamber and for delivering the heated air to said intake manifold, means for circulating fuel through said second chamber and subsequently delivering said fuel into said third chamber while in heat-exchange relationship with the heated engine coolant circulating through said second and third chambers, granular material filling said second and third chambers, the fuel circulating through said second and third chambers being progressively heated and vaporized so that the fuel attains a gaseous state while in said third chamber, the heated granular material in said third chamber completing conversion of said fuel from liquid to gaseous state, and means for delivering said gaseous fuel from said third chamber to said carburator.

4,364,366

INDUCTION SYSTEM FOR SUPERCHARGED ENGINE

Gerald L. Terwilliger, Wixom, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 8, 1980, Ser. No. 214,301
Int. Cl.³ F02B *33/44*
U.S. Cl. 123—564 **13 Claims**



1. An induction system adapted to supply air for combustion to an inlet of an expansible combustion chamber of an engine having a supercharger for boosting the pressure of the air, the system comprising:

a manifold assembly including first, second, third, and fourth air flow ducts converging into a central area, said first duct adapted to deliver aspirated air to said central area, said second duct adapted to deliver aspirated air from said central area to the supercharger, said third duct adapted to deliver boosted air from the supercharger to said central area, and said fourth duct adapted to deliver air from said central area to the inlet; and

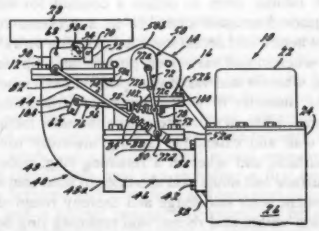
valve means including a valving member disposed in said central area and moveable between first and second positions, said valving member operative in said first position to divide said central area into first and second passages substantially blocked from intercommunication by said valving member, said first and second passages respectively communicating said first duct with said fourth duct and said third duct with said second duct, said valving member operative in said second position to divide said central area into third and fourth passages blocked from intercommunication by said valving member, and said third and fourth passages respectively communicating said first duct with said second duct and said third duct with said fourth duct.

4,364,367

LINKAGE MECHANISM FOR SUPERCHARGER SYSTEM

Gerald L. Terwilliger, Wixom, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 8, 1980, Ser. No. 214,358
Int. Cl.³ F02B *33/44*
U.S. Cl. 123—564 **6 Claims**



1. In an engine of the type including an expansible combus-

tion chamber; an induction manifold having an inlet and an outlet for respectively receiving air via a throttle means and delivering the air to the chamber, and first and second air flow paths connected in parallel between the inlet and outlet; a supercharger interposed in the second path; and valve means including a valving member and means responsive to differential air pressure between the inlet and outlet, said valving member moveable between first and second positions to control air flow in said first path for regulating said differential air pressure between a minimum and a maximum air pressure, and said pressure responsive means operative to move said valving member toward said first position to decrease said differential pressure in response to said differential pressure exceeding said maximum pressure; the improvement comprising:

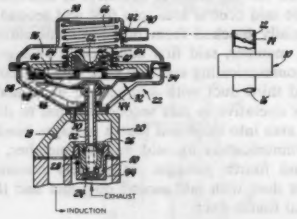
power control means including means selectively moveable between minimum and maximum engine power positions and first and second linkage assemblies connected in parallel at one end to said selectively moveable means and respectively connected at the other end to said valving member and said throttle means.

4,364,368

EXHAUST GAS RECIRCULATION CONTROL ASSEMBLY

Jon A. Blanchette, Fairport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 23, 1981, Ser. No. 236,828
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **2 Claims**



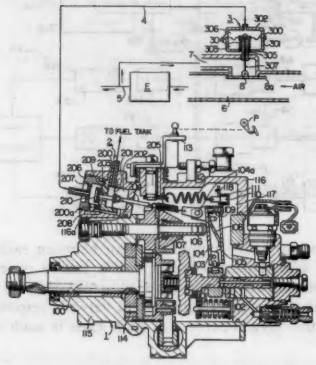
1. An assembly for controlling flow of exhaust gases through an exhaust gas recirculation passage, said assembly comprising a valve pintle adapted for disposition in said passage, said pintle having an axially extending recess terminating at a transversely extending end wall and defining an internal chamber adjacent said end wall, said pintle further having one or more lateral openings for allowing entry of exhaust gases from said passage to said chamber, said assembly further comprising a valve stem having a portion received in said recess, said valve stem being of hollow tubular form to define a conduit for conducting exhaust gases from said chamber to a pressure responsive member, wherein said recess has a ledge facing away from said end wall, wherein said valve stem portion has a tip received by said ledge, wherein said valve stem portion has a tapered outer surface the diameter of which decreases with distance from said end wall, wherein said recess has a shoulder facing toward said end wall and extending radially inwardly toward said tapered surface, and wherein a retaining ring embraces said tapered surface and abuts said shoulder to hold said tip firmly in engagement with said ledge and thereby retain said valve stem portion within said recess, said retaining ring being radially elastic to allow withdrawal of said pintle from said stem whereby exhaust gas deposits may be removed from said chamber and said conduit.

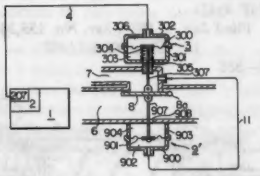
4,364,369

METHOD AND APPARATUS FOR RECIRCULATING EXHAUST GASES IN DIESEL ENGINE

Etsuji Nomura, Anjo; Hideaki Sasaya, and Toshikuni Miyazaki, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 20, 1980, Ser. No. 179,785
Claims priority, application Japan, Oct. 17, 1979, 54-134409
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—569 **5 Claims**





1. An exhaust gas recirculation apparatus for a diesel engine having a fuel injection pump, comprising:

an exhaust gas recirculation passage for recirculating exhaust gases from an exhaust pipe to an intake pipe;

a valve body for controlling the cross-sectional area of said exhaust gas recirculation passage;

a fuel pressure regulator for detecting an amount of fuel injected by the fuel pump and for transmitting a fuel pressure signal; and

means for driving said valve body including diaphragm means adapted to be actuated in response to said fuel pressure signal whereby, in response to an increase of fuel injection, the cross-sectional area of said exhaust gas recirculation passage is decreased;

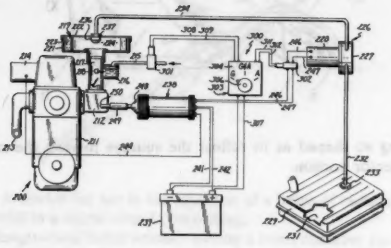
said fuel pressure regulator including a diaphragm defining a first chamber on one side thereof and a second chamber on the other side thereof, a first rod securely attached at its one end to said diaphragm, a cover defining therein a third chamber adapted to be communicated through a passage with said second chamber and a second rod securely attached at its one end to said diaphragm and having said valve body mounted at its other end, said second chamber being in communication with a low pressure in the suction port of the fuel injection pump, said valve body serving to selectively establish communication between said second and third chambers.

4,364,370

METHOD AND APPARATUS FOR SUPPLYING FLUID TO AN INTERNAL COMBUSTION ENGINE

Byron D. Smith, 7019 McCauley Trail, Edina, Minn. 55435, and Terrence J. Erickson, 8186 Hames Rd. S., Cottage Grove, Minn. 55016

Filed Aug. 27, 1980, Ser. No. 181,849
Int. Cl.³ F02B 47/00; F02M 43/00; F02D 19/00
U.S. Cl. 123—575 46 Claims



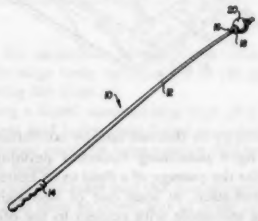
1. An apparatus for supplying a second fluid fuel intake air used by an internal combustion engine having an intake manifold accommodating a first fluid fuel and ignition means producing electrical energy pulses in timed relation to the speed of the engine comprising: container means for storing a second fluid fuel, nozzle means for discharging the second fluid fuel to provide an air and first and second fluid fuel mixture in the intake manifold, pump means operable to pump the second fluid fuel under pressure from the container means to said nozzle means, an electric motor operable to drive the pump means, means to sense the vacuum pressure of gas in the intake manifold, and control means operably associated to the means to sense the vacuum pressure in the intake manifold and produce an electrical signal in proportion to the vacuum pressure of the gas in said intake manifold, said control means having means operable to provide output electric energy to operate the electric motor as a function of the product of said electric energy pulses of the ignition means and the electric signal that is proportional to said vacuum pressure in the intake manifold, whereby said electric motor operates to drive the pump means so as to maintain a substantially constant ratio of the first and second fluid fuels relative to each other and to air in the intake manifold over the operating rpm of the engine.

4,364,371

HAND HELD BALL THROWING IMPLEMENT

Joseph H. Woolard, 1040 Charity Dr., Virginia Beach, Va. 23455

Filed Jan. 5, 1981, Ser. No. 222,474
Int. Cl.³ F41B 3/00
U.S. Cl. 124—5 4 Claims



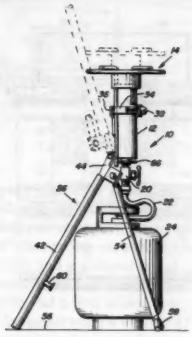
1. An improved ball throwing implement, comprising:
an elongated, flexible shaft having a grip end;
radially extending resilient means positioned near the opposite end of said shaft for frictionally engaging the wall of a diametral bore provided in a game element to be thrown by said implement; and
axially adjustable stop means positioned adjacent said resilient means for adjusting the extent of engagement of a diametral bore in a game element with said resilient means, whereby the force required to throw a game element from the implement can be selectively varied.

4,364,372

TRIPOD TORCH HANDLE

Joseph N. Johnson, 2795 N. Ludlow, Urbana, Ohio 43078

Filed Aug. 19, 1980, Ser. No. 179,934
Int. Cl.³ F24C 3/00
U.S. Cl. 126—39 R 16 Claims



1. For use with a heating device including a burner unit, an elongated torch tube secured to and enclosing the burner unit, said tube having opposite axial ends from which the burner unit projects and from which heat is emitted, respectively, and a fuel supply valve connected to the burner unit adjacent one of said axial ends of the tube from which the burner unit projects, the improvement residing in a handle assembly, means pivotally connecting the handle assembly to the tube about a single pivot axis adjacent said one of the axial ends, a support grid, and elongated slide means engageable with the tube for adjustably mounting the grid on the tube adjacent to said other of the axial ends from which heat is emitted.

4,364,373

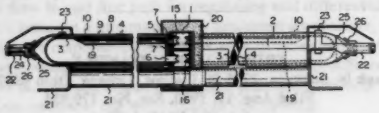
SOLAR COLLECTOR SYSTEM

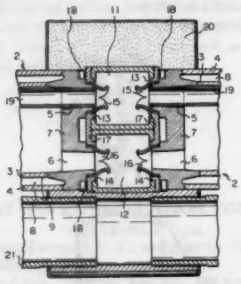
Hirosato Takeuchi; Fumito Degawa, and Toshio Mikiya, all of Tokyo, Japan, assignors to Nitto Kohki Co., Japan

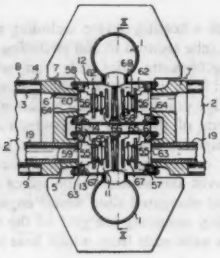
Filed May 13, 1981, Ser. No. 263,210
Claims priority, application Japan, Oct. 24, 1980, 55-149168; Nov. 29, 1980, 55-168467
Int. Cl.³ F24J 3/02; F24F 9/00
U.S. Cl. 126—418 17 Claims

1. A solar collector system comprising a conduit having a pair of adjacent channels, each channel having a port; a solar collector tube extending generally laterally from said conduit, said solar collector tube including an outer tube having an open end and a closed end, an inner tube having an open end and a closed end, said inner tube being arranged coaxially within said outer tube so as to form a space between said inner and outer tubes, and a cap positioned in said open ends of said inner and outer tubes, said cap including a first passageway extending between said inner tube and said port of one of said channels and a second passageway extending between said inner tube and said port of the other of said channels, whereby fluid in said conduit may be supplied to said inner tube through said first passageway nd then returned to said conduit through said second passageway; controlling means for controlling the flow of fluid through said first and second passageways, said

controlling means including a pair of valves, one of which is continuously and resiliently urged towards a closed position in which said one valve member prevents fluid flow through said port of said one channel and the other of which is continuously and resiliently urged towards a closed position in which said other valve member prevents fluid flow through said port of







said other channel; and moving means for moveing each of said valve members into an open position from its closed position, said moving means being disabled upon the breakage of said solar collector tube, whereby said valve members automatically assume their closed positions to inhibit the leakage of fluid from said conduit in the event that said solar collector tube breaks.

4,364,374

HEAT-ABSORBENT PANEL FOR SOLAR ENERGY AND SLOPING ROOF COMPOSED OF SUCH PANELS

Luigi Brazzola, Castel San Pietro, Switzerland, assignor to Elioform AG, Triesen, Liechtenstein

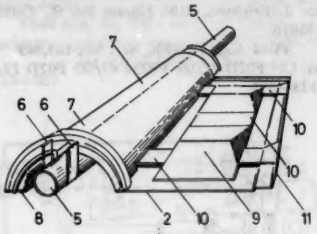
Filed Jan. 30, 1980, Ser. No. 116,811

Claims priority, application Switzerland, Jan. 31, 1979, 911/79; Jan. 4, 1980, 22/80

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—442 **4 Claims**

1. Solar energy absorptive panel for covering roofs, comprising a tile (2) having at least one downwardly opening raised portion (4) which collects heat, a transparent cap (7) that covers, insulates and protects the raised portion, the tile having at least one protuberance (9) defining a downwardly-opening cavity, said protuberances and raised portion being interconnected by at least one conduit (10) permitting circulation of the air contained in said protuberance so as to transport heat toward said raised collector portion (4), said protuberance (9)



being so shaped as to reflect the sunrays toward the raised collector portion.

4,364,375

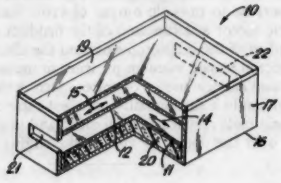
THERMAL SOLAR ENERGY COLLECTOR

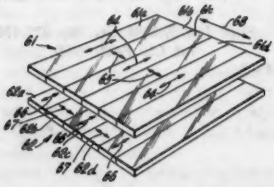
Lawrence B. Younghouse, Boonton, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 4, 1980, Ser. No. 175,335

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—444 **10 Claims**





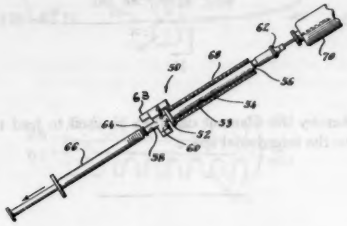
1. A solar energy to thermal energy converter comprising spaced apart light polarizing materials defining a conduit therebetween for the passage of a fluid to be heated by absorption of solar radiation, at least one of said light polarizing materials being moveable with respect to the other whereby the axis of absorption of the spaced apart polarizing materials can be placed in varying positions with respect to each other to effect the amount of solar radiation transmitted through the structure whereby the amount of solar energy absorbed by fluid between the polarizing materials is controlled.

4,364,376

METHOD AND DEVICE FOR INJECTING A BOLUS OF MATERIAL INTO A BODY

Keith E. Bigham, 178 Triangle St., Danbury, Conn. 06810

Filed Dec. 26, 1979, Ser. No. 94,355
Int. Cl.[3] A61N 5/12
U.S. Cl. 128—1.1 3 Claims



1. A device for use in the injection of a bolus of radioactive material in a blood vessel comprising:

a longitudinal bolus retainer having a bolus chamber extending between front and rear ends of the bolus retainer, a manually controlled valve located near the rear end of the bolus retainer to open and close said chamber near said rear end, the portion of the bolus chamber between the valve and the front end being capable of retaining a desired volume of said bolus material;

said bolus retainer being shaped to fit within a radioactive shield for radiation shielding thereby;

wherein said front end of the bolus retainer has an opening in unrestricted fluid communication with the bolus chamber to receive therein and discharge therefrom a bolus of said radioactive materials, said front end of the bolus retainer further being shaped to receive and retain a hypodermic needle assembly; and

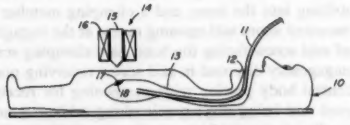
wherein said rear end of the bolus retainer is shaped to operatively releasably receive a syringe.

4,364,377

MAGNETIC FIELD HEMOSTASIS

Frederic W. Smith, Portland, Oreg., assignor to Walker Scientific, Inc., Worcester, Mass.

Continuation of Ser. No. 9,227, Feb. 2, 1979, abandoned. This application Feb. 2, 1981, Ser. No. 230,621
Int. Cl.[3] A61B 17/12
U.S. Cl. 128—1.5 18 Claims



1. Process for staunching bleeding at a lesion located in a comparatively large body cavity such as the gastrointestinal tract comprising the steps of:

(1) providing a liquid tamponading mass of a large volume that covers said lesion, said liquid mass being formed of ferromagnetic particles suspended in said large volume of a viscous liquid;

(2) introducing said mass into the gastrointestinal tract; and

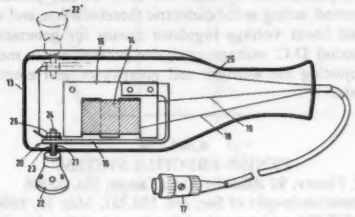
(3) biasing said mass to cover and to press upon a bleeding lesion within said gastrointestinal tract by externally generated magnetic field means that acts upon said ferromagnetic particles, said biasing acting to hold said liquid mass in position over said lesion and to staunch the bleeding at said lesion.

4,364,378

MASSAGE APPARATUS WITH ELECTROSTATIC FIELD

Willy Seuss, deceased, late of München, Fed. Rep. of Germany, and by Fride Seuss nee Falter, executrix, Rembrandtstr, 5, 8000 München, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 844,186, Oct. 21, 1977, abandoned. This application Jun. 16, 1980, Ser. No. 159,838
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1976, 2647947
Int. Cl.[3] A61H 21/00
U.S. Cl. 128—24.5 6 Claims



1. A massage apparatus for massaging the skin of a person to be treated which apparatus comprises

(a) an electrical switching circuit adapted to be connected to a source of alternating electric current and comprising a rectifying unit and a current supply means for generating a first, periodically interrupted D.C. voltage between a first plus pole and a first minus pole, linear voltage regulator means for generating a second D.C. voltage between a second plus pole and a second minus pole, and comprising posts for the connection of lines for each of said poles and frequency control means adapted for infinitely varying the periodic interruptions of said first D.C. voltage, applied to said first minus pole and said first plus pole, in the range of from 5 to 50 cycles,

(b) a first massaging unit comprising a housing, electromagnetic oscillator means adapted for producing mechanical oscillation and comprising electromagnetic coil means and armature means, said armature means having a free oscillatable armature end, and

a vibrator head of electrically conductive material and having a flat part and an electrically insulating coating covering said flat part, said vibrator head being destined to be placed with the electrically insulating coating of said flat part on a first region of the skin of a person to be treated, and said vibrator head having an electrically conductive neck portion, facing away from said flat part and being mounted on said free oscillatable armature end in such a position that at least said flat vibrator head part is outside said housing, and the oscillations of said vibrator head occur along an axis extending substantially vertically to the skin portion contacted by said flat part,

(c) coil-energizing current supply circuit comprising said rectifier means for producing a D.C. supply voltage and having output posts, said electromagnetic coil means being connected across said output posts,

(d) electric lines connected to the posts of said first plus pole and to said first minus pole, on the one hand, and to said current supply circuit on the other hand, whereby said electromagnetic coil means are energized interruptedly in harmony with said first, periodically interrupted D.C. voltage,

(e) an electric line connected to one of the posts of said second plus pole and said second minus pole, on the one hand, and to said electrically conductive neck portion, to apply the respective pole of said second D.C. voltage to said flat part of said vibrator head, whereby said flat part constitutes a first electrode,

(f) a second electrode unit of electrically conductive material and having a flat part adapted for being placed on a

second region of the skin of the same person to be treated, on the opposite side of the body portion from where said vibrator head flat part defined under (b) is placed on the skin, that body portion constituting a dielectric layer between said first and second electrodes,

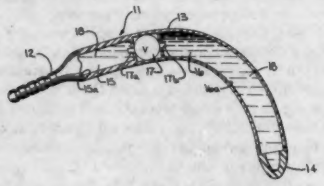
(g) a separate electric line connected to the other one of the posts of said second plus pole and said second minus pole, on the one hand, and to said second electrode unit, thereby establishing an electrostatic field of said second D.C. voltage, between said flat part of said vibrator head and said flat part of said second electrode unit, as capacitor plates, and through the body of the person to be treated, acting as the dielectric therebetween, and wherein said linear voltage regulator means for generating said second D.C. voltage comprise potentiometer means for adjusting the strength and polarity of said electrostatic field.

4,364,379

PENILE ERECTILE SYSTEM

Roy P. Finney, 92 Adriatic Ave., Tampa, Fla. 33606

Continuation-in-part of Ser. No. 150,231, May 15, 1980, Pat. No. 4,318,396, and a continuation-in-part of Ser. No. 244,335, Mar. 17, 1981. This application Nov. 5, 1981, Ser. No. 318,583
Int. Cl.³ A61F 5/00
U.S. Cl. 128—79 4 Claims



1. A penile erectile system comprising an elongated penile implant having a stem at one end, a tip at the other end, a first and second chamber axially positioned between the stem and tip, said first chamber having a resilient, non-collapsible wall and the second chamber having a flexible, non-distensible wall, both of said chambers being substantially filled with fluid, a passage providing communication between the first and second chambers and valve means in said passage for controlling the flow of fluid between the chambers, said valve means serving as a check valve which normally permits flow only from said first to second chamber and a relief valve which permits flow from the second chamber to the first chamber when the pressure in the second chamber exceeds a predetermined pressure.

4,364,380

DEVICE FOR USE IN INTERDENTAL ARCH WIRING

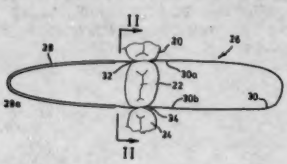
Michael Lewis, 10067-98 St., Grande Prairie, Alberta, Canada (T8V 2E7)

Filed Jul. 31, 1981, Ser. No. 288,715
Int. Cl.³ A61F 5/04
U.S. Cl. 128—89 A 7 Claims

1. A device for use in interdental arch wiring, comprising:

a length of thin and malleable wire suitable for wiring a fractured jaw, and having respectively opposite end portions, and

an elongate filament having ends secured to respective ones of said wire end portions so as to effectively form continuations of said portions, said filament being sufficiently thin and flexible to permit insertion thereof into an interdental space between two adjacent teeth by tensioning the filament across the interdental contact point between the teeth with the filament extending generally normal to a line joining the teeth, and drawing the tensioned filament downwardly through the interdental contact point,



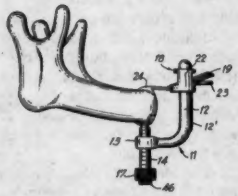
whereby the filament can then be used to lead the wire into the interdental space.

4,364,381

SURGICAL CLAMP AND DRILL-GUIDING INSTRUMENT

Jay H. Sher, 19 Vermeer Dr., Apt. 8, South Amboy, N.J. 08879, and A. Norman Cranin, 209 Cedar Ave., Hewlett, N.Y. 11557

Filed Jan. 31, 1980, Ser. No. 117,183
Int. Cl.³ A61F 5/04
U.S. Cl. 128—92 E 11 Claims



1. A surgical clamping and drill-guiding instrument for gripping a bone exposed during surgery and providing an accurate drill guide comprising:

an L-shaped member having an elongated keyed post and a leg extending from the post, the leg having a screw receiving portion for positioning on one side of the bone to be gripped;

an elongated clamping screw having a longitudinal opening means therethrough for receiving a removable drill guide of a chosen size for guiding a drill of said chosen size for drilling into the bone, and a clamping member rotatably mounted about said opening means at the engagement end of said screw facing the bone, said clamping screw being engageably disposed in said screw receiving portion; and

a central body portion with an opening for receipt of said post and being displaceable along said post; an arm extending from said body portion generally parallel to said leg, said arm including fingers for engaging the outer side of the bone and having an opening between said fingers for cooperating with the opening means in said screw and locking means for locking the body portion at a preselected position on said post; said post, when received within and being in movable keyed engagement with said body portion, provides an alignment means which facilitates the cooperation of the opening means in said screw with the opening between said fingers;

said screw and clamping member displaceable through said screw receiving portion on said leg towards the bone so as to fixedly locate said drill guide with respect to the bone disposed between said clamping member and said fingers on the arm for providing a vise-like grip about the bone.

4,364,382

INTERNAL FIXATION DEVICE FOR BONE FRACTURES

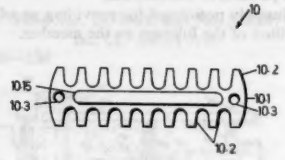
Ulrich Mennen, 49 Hill Ter., Riviera, Pretoria, Transvaal, South Africa

Filed Aug. 19, 1980, Ser. No. 179,521

Claims priority, application South Africa, Aug. 23, 1979, 79/0862; Jan. 21, 1980, 80/0327

Int. Cl.³ A61F 5/04

U.S. Cl. 128—92 D 3 Claims



1. An internal fixation device for bone fractures comprising a unitary metallic member including:

an elongated central portion having upper and lower surfaces which are respectively convex and concave;

a plurality of arcuate finger portions extending integrally from the opposite sides of said central portion and extending generally downwardly and outwardly from said central portion in an opposed relation to define a generally channel shaped structure; wherein said finger portions are generally arranged transverse to the longitude of said elongated central portion;

each finger portion terminating in an inwardly extending fastening means having a sharpened edge constructed and arranged for penetration into said bone;

said central portion having an elongated stiffening corrugation extending longitudinally for a majority of its length and being elevated from said upper surface, said central portion and said stiffening corrugation being constructed and arranged so that said device flexes at said stiffening formation; whereby, when said member is deformed by forcing said finger portions toward each other inwardly for penetration of said fastening means into said bone, the central portion and said stiffening portion will arch away from said bone to minimize damage thereto.

4,364,383

I.V. FLASHBACK INDICATION

John L. Vcelka, 905 Wilson Ct., Zion, Ill. 60099

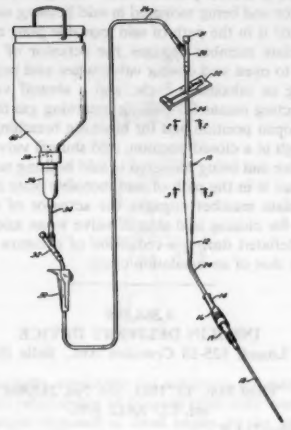
Filed Aug. 25, 1980, Ser. No. 181,299

Int. Cl.³ A61M 5/14

U.S. Cl. 128—214 R 9 Claims

1. In an I.V. administration set including first and second component members of the type normally utilized in a parenteral solution administration set with flexible tubing secured to said components and one of said components including means for attachment to a hypodermic needle, said flexible tubing composed of a resinous plastic material compatible with parenteral solutions and secured to said first and second components in a manner such that the component members will remain integrally attached to said tubing even when said tubing is subjected to internal pressures normally associated with hypodermic syringes,

the improvement comprising a flashback indicator of one-piece construction defined by an enlarged portion in the passageway of the tubing with said tubing having a wall thickness in



said enlarged portion greater than the wall thickness of the tubing immediately adjacent said enlarged portion.

4,364,384

EXCESS PRESSURE RESPIRATOR WITH PRESSURIZED BREATHING GAS SHUTOFF

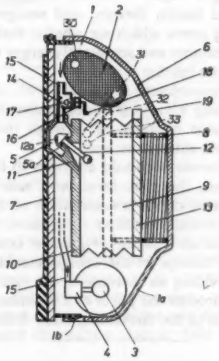
Ernst Warncke, Lübeck, and Adalbert Pasternack, Bad Schwartau, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 249,085

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1980, 3015759

Int. Cl.³ A62B 7/04

U.S. Cl. 128—204.28 7 Claims



1. An excess pressure respirator comprising:

a housing;

a breathing bag mounted to said housing and having at least one movable plate member which moves with change of volume in said bag;

biasing means engaged with said plate member for biasing said plate member in a direction to deflate said bag;

at least one respiration line connected to said bag for inhalation and exhalation cycles from and to said bag;

a pressurized breathing gas source mounted to said housing;

connecting means between said source and said bag for supplying breathing gas to said bag from said source;

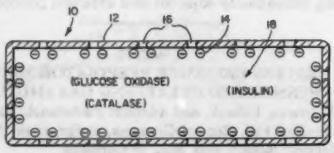
a dosing valve in said connecting means for passing breathing gas to said bag in an open position and for blocking such in a closed position, said dosing valve having an actuator and being mounted in said housing such that said actuator is in the path of said movable plate member and said plate member engages the actuator of said dosing valve to open said dosing valve when said bag is deflated during an inhalation cycle; and a shutoff valve in said connecting means for passing breathing gas therethrough in an open position and for blocking breathing gas therethrough in a closed position, said shutoff valve having an actuator and being mounted in said housing such that said actuator is in the path of said movable plate member and said plate member engages the actuator of said shutoff valve for closing said shutoff valve when said bag is further deflated during a reduction of pressure in said bag below that of an inhalation cycle.

4,364,385

INSULIN DELIVERY DEVICE

Steven V. Lossef, 125-15 Cronston Ave., Belle Harbor, N.Y. 11694

Filed Mar. 13, 1981, Ser. No. 243,494
Int. Cl.³ A61J 7/00
U.S. Cl. 128—213 R **6 Claims**



5. A method for providing a controlled release of insulin comprising the steps of:

providing a compartment limited by a semipermeable membrane having a negative surface charge and containing enzymes and insulin therein, said semipermeable membrane having pores which are smaller that the molecular size of the enzymes and are slightly larger than the molecular size of the insulin;

placing said compartment in contact with circulating body fluid containing a varying concentration of glucose, said glucose capable of diffusing through the pores of said semipermeable membrane; and

reacting the glucose with said enzymes to liberate positive hydrogen ions, the concentration of said hydrogen ions being a function of the concentration of the glucose;

whereby as the concentration of positive hydrogen ions increases with an increase of glucose concentration, the net negative charge of the semipermeable membrane is reduced providing an increase in the rate of diffusion of the insulin through the pores as a function of the glucose concentration in the circulating body fluids.

4,364,386

APPARATUS FOR CONVERTING A PUMP TO A CONTROLLER

Jon A. Jenkins, Rancho Santa Fe, and Herbert A. Schwan, Encinitas, both of Calif., assignors to Imed Corporation, San Diego, Calif.

Filed Dec. 8, 1980, Ser. No. 213,863
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214 E **31 Claims**

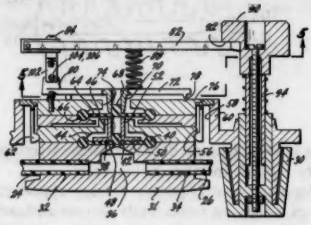
1. In combination for converting a pump into a controller for controlling within particular limits the pressure of fluid introduced from a source to a patient,

a housing having an inlet and an outlet for the flow of fluid and having a chamber in communication with the inlet and the outlet,

a resilient diaphragm disposed in the chamber and constrainable in accordance with the pressure of the fluid in the chamber,

a member having an adjustable fulcrum and pivotable from the adjustable fulcrum, the member being operatively coupled to the diaphragm for variable positioning pivotably in accordance with the constraint of the diaphragm and the position of the fulcrum,

means adjustably positioned for providing an adjustment in the position of the fulcrum on the member,



a light source,

a photocell,

means for providing for a variation in the amount of the light passing from the light source to the photocell in accordance with the variations in the positioning of the resilient member, and

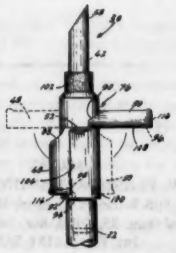
means responsive to a particular change in the passage of the light from the source to the photocell for indicating that the pressure of the fluid within the housing has exceeded the particular limits.

4,364,387

CONNECTING DEVICE FOR MEDICAL LIQUID CONTAINERS

Mark E. Larkin, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 18, 1980, Ser. No. 217,870
Int. Cl.³ A61M 5/14
U.S. Cl. 128—214 C **17 Claims**



1. An improved connector device for liquid containers having a tubular port extending therefrom comprising:

an elongated tubular member having means constructed and arranged for telescopic connection to said tubular port;

at least one longitudinal fluid passage extending through said tubular member for the passage of liquid, the improvement comprising:

pivotable finger tabs means hingedly attached to and extending from said elongated tubular member for the digital engagement and manipulation of said connector, said pivotable finger tab means having means constructed and

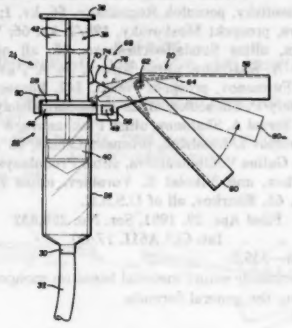
arranged for selective coaxial alignment against said elongated member in a first position and for arcuate extension into locking fixation in a substantially normal configuration in a second position, thereby facilitating storage in said first position and digital engagement and manipulation of said connector in said second position.

4,364,388

SYRINGE DISPENSING APPARATUS

Jerry E. Cech, 4383 E. Mt. Morris Rd., Mt. Morris, Mich. 48458

Filed Apr. 20, 1981, Ser. No. 255,197
Int. Cl.³ A61M *1/00*
U.S. Cl. 128—234 **9 Claims**



1. A metering dispensing apparatus for a conventional plastic syringe, said syringe having a tubular cylindrical fluid reservoir having an open end and termination in a restricted dispensing outlet, said syringe having a reciprocal plunger including a resilient cylindrical piston telescopically received in said reservoir through said open end for dispensing fluids through said restricted reservoir outlet, said plunger having an elongated radially projecting portion, said dispensing apparatus comprising a retainer collar having an elongated flexible strap portion receivable around said syringe reservoir adjacent said open end and a hand operated ratchet mechanism attachable to said collar, said hand ratchet mechanism including a fixed handle releasably attached to said collar strap portion, a spring biased movable handle pivotally attached to said fixed handle intermediate its ends and a spring biased ratchet means including a detent having a sharp edge pivotally supported on the free end of said movable handle adjacent said syringe plunger, and an alignment means on said strap portion aligning said radially projecting portion of said plunger with said detent, said ratchet means detent adapted to releasably grip said plunger radially projecting portion upon pivotal movement of said movable handle telescoping said plunger into said reservoir and dispensing fluids through said restricted reservoir opening.

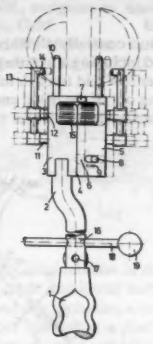
4,364,389

INSTRUMENT FOR HOLDING AND INSERTING THE TIBIA PLATE FOR AN ENDO-KNEE PROSTHESIS HAVING SLIDING SURFACES

Arnold Keller, Kayhude, Fed. Rep. of Germany, assignor to Waldemar Link GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed Mar. 17, 1981, Ser. No. 244,627
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010421
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—303 R **13 Claims**

1. A prosthesis instrument for holding and inserting a pair of tibia plate members for an endo-knee prosthesis having sliding surfaces, comprising an instrument support handle, a pair of tibia plate support means on the support handle for rigidly supporting a pair of tibia plate members respectively in predetermined lateral relationship for holding and inserting them for said prosthesis, the pair of tibia plate support means being



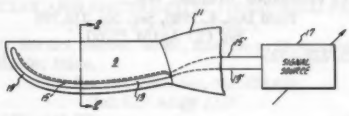
relatively laterally adjustable for adjusting the said predetermined lateral relationship of the said tibia plate members, and reference edges disposed at fixed angles to the pair of tibia plate support means in the direction in which they are relatively laterally adjusted.

4,364,390

SURGICAL INSTRUMENT HAVING SELF-REGULATING DIELECTRIC HEATING OF ITS CUTTING EDGE AND METHOD OF USING THE SAME

Robert F. Shaw, 50 St. Germain, San Francisco, Calif. 94114

Continuation of Ser. No. 558,333, Mar. 14, 1975, Pat. No. 4,207,896, which is a continuation-in-part of Ser. No. 534,756, Dec. 2, 1974, Pat. No. 4,089,336, which is a continuation of Ser. No. 63,645, Aug. 13, 1970, abandoned, which is a continuation of Ser. No. 681,737, Nov. 19, 1967, abandoned. This application Sep. 5, 1979, Ser. No. 72,359
Int. Cl.³ A61B *17/32*; A61N *3/00*
U.S. Cl. 128—303.1 **16 Claims**



1. A blade comprising:

a cutting means including a cutting edge and a dielectric means disposed in the region along said cutting edge for dissipating power in inverse relation to temperature over a portion of a temperature range, said power so dissipated being generated in response to an alternating electric field applied to said dielectric means; and

electrode means disposed adjacent said dielectric means for applying said alternating electric field to said dielectric means.

4,364,391

TRACHEOSTOMY APPARATUS AND METHOD

Frederic J. Toye, 275 Old Ranch Rd., Seal Beach, Calif. 90730

Filed Nov. 14, 1980, Ser. No. 206,709
Int. Cl.³ A61F *17/32*
U.S. Cl. 128—305.3 **11 Claims**

1. Tracheostomy apparatus comprising:

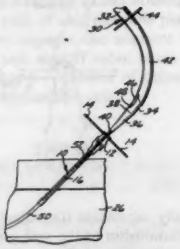
a hollow outer needle having a central bore and a longitudinal slot opening into said bore;

a hollow inner needle for attachment to a syringe and for

coaxial slidable receipt within said bore for insertion of both said outer and inner needles into the tracheal lumen, said syringe being operable to withdraw air from said lumen thereby to confirm location of said needles in said lumen;

a trachea tube; and

an elongated dilator coaxially slidably fitted through said trachea tube, and including a handle portion extending out of the proximal end of said trachea tube, and an introducer portion extending out of the distal end of said trachea tube and tapering distally from a larger diameter to a smaller



diameter, said dilator further including an elongated, flexible leader non-separably carried by said introducer portion and adapted for insertion through said bore of said outer needle and into said tracheal lumen subsequent withdrawal of said inner needle whereby said outer needle is removable from said tracheal lumen by passage of said leader laterally out of said slot, the proximal end of said introducer portion including a recessed cutting edge for cutting tissue stretched across it upon forcible insertion of said introducer portion and said trachea tube into said lumen along the path defined by said leader.

4,364,392

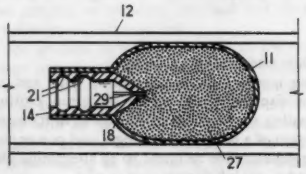
DETACHABLE BALLOON CATHETER

Charles M. Strother, Madison, and Balakrishna V. Kudva, Monona, both of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Dec. 4, 1980, Ser. No. 212,759

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—325 **42 Claims**



1. Balloon catheter apparatus comprising:

(a) an inflatable balloon of biocompatible elastic material;

(b) a neck portion attached to the balloon and having an interior bore opening into the interior of the balloon;

(c) small, flowable solid filler particles in a carrier liquid filling the interior of the balloon, the filler particles packed to maintain the balloon in substantially inflated shape;

(d) valve means in the neck portion for opening to allow passage of a suspension of the solid filler particles in a carrier liquid into the interior of the balloon and closing to prevent the discharge of the particles out of the interior of the balloon;

(e) a catheter tube adapted to fit into the bore of the neck portion and having an interior bore through which a suspension of the solid particles in a carrier liquid can be pumped through the valve means and into the interior of the balloon; and

(f) means for releasably securing the catheter tube to the neck portion so that the catheter tube will be released when a pulling force is applied to the catheter tube which is greater than a selected minimum force.

4,364,393

ABSORBABLE SURGICAL SUTURE MATERIAL BASED ON MONOCARBOXYCELLULOSE AND METHOD FOR PRODUCING THE SAME

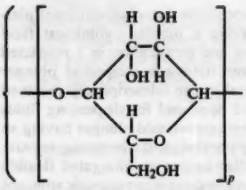
Boris G. Yasnitsky, pereulok Rogatinsky, 56, kv. 1; Galina M. Tsukanova, prospekt Moskovsky, 198/2, kv. 66; Valentin A. Oridoroga, ulitsa Sotsialisticheskava, 15, all of Kharkov; Alexandr A. Shalimov, ulitsa Kirova, 34"A", kv. 59, Kiev; Jury A. Furmanov, prospekt Nauki, 142, korpus 12, kv. 4, Kiev; Valery P. Silchenko, ulitsa Krasnoarmeiskaya, 101, kv. 20, Kiev; Sergei A. Shalimov, ulitsa Plekhanova, 4"A", kv. 93, Kiev; Yaroslav I. Khadzhai, prospekt Lenina, 48"A", kv. 36, Kharkov; Galina V. Obolentseva, ulitsa Prodolnaya, 3"B", kv. 28, Kharkov, and Nikolai E. Vorobiev, ulitsa Prodolnaya, 3"B", kv. 65, Kharkov, all of U.S.S.R.

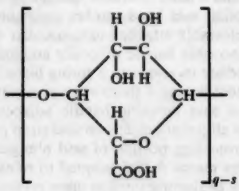
Filed Apr. 29, 1981, Ser. No. 258,832

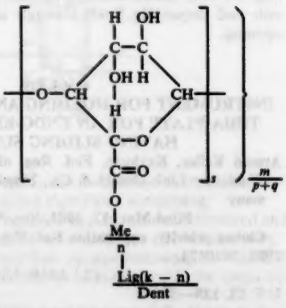
Int. Cl.³ A61L *17/00*

U.S. Cl. 128—335.5 **2 Claims**

1. An absorbable suture material based on monocarboxycellulose having the general formula:







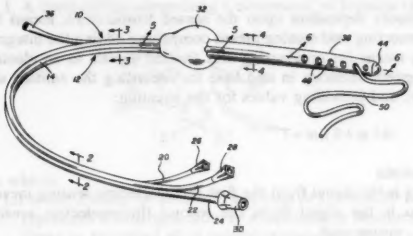
where m is a degree of polymerization of the initial cellulose from 250 to 3.300;

p is a molar fraction of D-glucopyranose cycles in one polymer period from 0.88 to 0.60;
q is a molar fraction of cycles of D-anhydroglucuronic acid from 0.12 to 0.40;
s is a molar fraction of the complex fragment of D-anhydroglucuronic acid, metal and ligand, from 0.04 to 0.24;
Me is a transition metal selected from the group consisting of Fe, Ni, Co, Bi, Mn and a combination thereof;
n is a valency of the transition metal;
K is a coordination number of the transition metal
Lig is polydentate ligands selected from the group consisting of tannin, gallic acid, ethylene diamine tetraacetic acid, 8-oxyquinoline and quinosol; and
Dent is a dentation of the ligands.

4,364,394
COMBINED SUMP DRAINAGE AND IRRIGATION DEVICE

Lawrence H. Wilkinson, 718 Encino Pl., NE., Albuquerque, N. Mex. 87102

Filed Nov. 24, 1980, Ser. No. 210,052
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—96 **4 Claims**

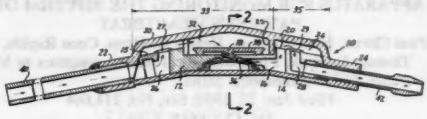


1. A combined sump drainage and irrigation device including an elongated flexible tube structure defining a pair of side-by-side large diameter individual suction and vent passages and pair of small diameter individual inflation and injection passages disposed on remote sides of adjacent portions of said large diameter passages, an inflatable elongated balloon bladder surrounding said tube structure centrally intermediate its opposite ends, extending longitudinally thereof and sealed at its opposite ends to longitudinally spaced portions of said tube structure, one set of ends of said large diameter passages and one of said small diameter passages opening separately outwardly of one end portion of said tube structure, the other end of one of said small diameter passages opening outwardly into the interior of said bladder, said tube structure including a tubular jacket enclosing the other end portion of said tube structure and having a first end adjacent said bladder sealed relative to the outer surfaces of said tube structure and an end wall closing the second end of said jacket remote from said bladder, the other end of said vent passage terminating a spaced distance from said end wall and opening into the interior of said jacket, said other end of said suction passage opening into one end of a tube section disposed in and extending centrally longitudinally of said jacket and having its other end anchored to and closed by said end wall, said jacket including longitudinally spaced lateral air vent openings formed therein intermediate said end wall and said first end of said jacket, said tube section other end including lateral openings formed therein spaced from but adjacent said end wall, the other end of said injection passage opening into one end portion of a second flexible tube section loosely received in and extending longitudinally of said jacket and having its other end portion directed outwardly through one of said air vent openings and extending outwardly beyond said one air vent opening.

4,364,395
LOW PROFILE SHUNT SYSTEM

Russell J. Redmond, Santa Barbara, and Donald L. Hannula, Goleta, both of Calif., assignors to American Heyer-Schulte Corporation, Goleta, Calif.

Filed Jun. 30, 1981, Ser. No. 279,107
Int. Cl.³ A61M *27/00*
U.S. Cl. 604—10 **17 Claims**

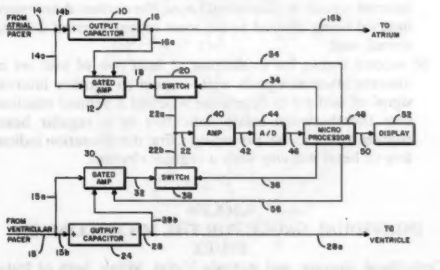


1. A shunt system for implantation in the body, comprising:
a body having an upper and lower surface and a distal and proximal end, the body including a central cavity opening through the upper surface at a first and second port, a proximal fluid flow channel extending through the proximal end of the body and opening at a third port on the upper surface, and a distal fluid flow channel extending through the distal end of the body opening at a fourth port on the upper surface;
a resilient dome attached to and extending over the upper surface of the body, a first portion of the resilient dome extending over the first and third ports on the upper surface defining a first chamber wherein the first portion of the resilient dome upon flexing cooperates with the third port to occlude the third port and wherein a second portion of the resilient dome extends over the second and fourth ports on the upper surface defining a second chamber wherein the second portion of the resilient dome cooperates upon flexing with the fourth port to occlude the fourth port; and
a diaphragm valve means positioned within the central cavity for cooperating with the first port to open or close the first port to fluid flow between the central cavity and first chamber.

4,364,396
CIRCUIT AND METHOD FOR MEASURING PSA OUTPUT AND ENERGY

Thomas C. Barthel, Becker, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 15, 1981, Ser. No. 273,698
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PT **6 Claims**



1. An apparatus for indicating an energy content of a body stimulating electrical pulse produced by a discharge of a capacitor having a given capacitance comprising:
means responsively coupled to said capacitor for measuring a first voltage drop across said capacitor prior to said discharge and a second voltage drop subsequent to said discharge;

means responsively coupled to said measuring means for computing said energy content from said first voltage drop, said second voltage drop, and said given capacitance; and

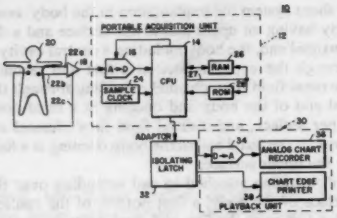
means responsively coupled to said computing means for displaying said energy content.

4,364,397

APPARATUS FOR MONITORING THE RHYTHM OF A PATIENT'S HEARTBEAT

Paul Citron, New Brighton; Dennis G. Hepp, Coon Rapids, and Thomas L. Jirak, Plymouth, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 23, 1980, Ser. No. 114,664
Int. Cl.³ A61N 5/04
U.S. Cl. 128—710 **22 Claims**



1. Apparatus for monitoring and storing electrical signals indicative of heart activity of a patient, said apparatus comprising:

(a) memory means including at least first and second areas;

(b) means coupled to receive analog heart signals from the patient for sampling and digitizing said analog signals to provide digital heart signal samples;

(c) first means for temporarily storing the digital heart signal samples in said first area, the earliest heart signal samples stored being cleared as the most recent heart signal samples are stored;

(d) signal samples processing means including:

(i) first means for evaluating the digital heart signal samples stored in said first area to determine the existence of unique heart signal features corresponding to a heartbeat; and

(ii) means for determining the interval between adjacent valid heartbeats and for providing a series of discrete signals indicative of the interval therebetween;

(e) second means for receiving the discrete interval signals and for storing a continuously updated set of the discrete interval signals in said second area, the earliest determined interval being cleared as the most recent interval is being stored; and

(f) second means for evaluating at least one of said set of discrete interval signals with respect to another interval signal of said set to determine whether a defined relationship therebetween exists indicative of a regular heart rhythm and if so, for providing a first manifestation indicative of heart activity with a regular rhythm.

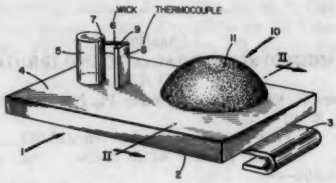
4,364,398

INDIVIDUAL GAUGE FOR THE MICROCLIMATE INDEX

Carlo Sassi, Segrate, and Antonio Vicini, Milan, both of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Jun. 27, 1980, Ser. No. 163,511
Claims priority, application Italy, Jul. 6, 1979, 24141 A/79
Int. Cl.³ A61B 5/05; G01J 5/00
U.S. Cl. 128—736 **5 Claims**

1. An individual device for determining the microclimate index of a person independently of that of other persons within the overall surroundings which comprises a base, means on the base for attaching the device to a person's clothes, a closed container for storage of water mounted on the base, a wick having one of its ends submerged in the water and projecting outwardly from the container, a first means connected to said wick for thermoelectric sensing of the temperature of the wick wet with water and for emitting a signal having an intensity dependent upon the sensed temperature, a black-surfaced outwardly convex semispherical hollow metallic member supported with its open side facing said base and its black convex surface facing the surrounding atmosphere, a second thermoelectric sensing means for sensing the temperature existing in correspondence of the focus of the concave surface of said black surfaced member and for emitting a signal having an



intensity dependent upon the sensed temperature, means for connecting said sensing means comprising adding the integrating means for conducting said emitted signals to an electromagnetic memory in said base for recording the emitted signals, and providing values for the equation:

$$0.3\ tg+0.7\ tu=T$$

wherein

tg is the signal from the first thermoelectric sensing means;

tu is the signal from the second thermoelectric sensing means; and

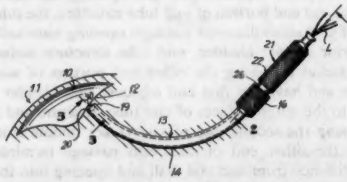
T is the microclimate index, from which said index is calculated, each of said components having a size which adapts the device to be supported on a person.

4,364,399

DIAGNOSTIC INSTRUMENT

Joseph H. Dashefsky, 100 Manetto Hill Rd., Plainview, N.Y. 11803

Filed Feb. 23, 1981, Ser. No. 236,902
Int. Cl.³ A61B 5/10
U.S. Cl. 128—774 **9 Claims**



1. An instrument for measurement of the deformation resistance of cartilaginous tissue, such as the articular surface of the cartilage of the patella comprising, in combination, a cannula having a bore, said cannula having a first end portion defining a blunt stop surface, a carrier member movably mounted in said bore and including a sensing end portion and a manipulation end portion, complemental limit stop means formed on said cannula and carrier member positioned to engage at a limiting inserted position of said sensing end portion of said carrier member into said cannula and to block further relative movements of said parts in the direction of insertion of said carrier member, a pressure sensing transducer mounted in said

carrier member adjacent said sensing end portion, said transducer including a pressure sensing surface at a lead portion thereof, said pressure sensing surface, at said limiting inserted position of said carrier member being disposed within said cannula in proximate spaced relation to said stop surface, and a resilient, compressible pressure transmission member mounted on said pressure sensing surface of said transducer, said transmission member, in said limiting inserted position, projecting a predetermined distance beyond said stop surface.

4,364,400
HETEROCYCLIC DERIVATIVES AS FLAVORING AGENTS

Max Winter, deceased, late of Vandoeuvres, Switzerland, and by Pierre Mottu, executor, Geneva, Switzerland, assignors to Firmenich SA, Geneva, Switzerland

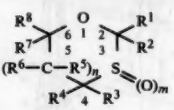
Division of Ser. No. 907,828, May 19, 1978, Pat. No. 4,262,030, which is a division of Ser. No. 805,338, Jun. 10, 1977, Pat. No. 4,220,561, which is a continuation-in-part of Ser. No. 600,275, Jul. 31, 1975, abandoned. This application Jul. 29, 1980, Ser. No. 173,290

Claims priority, application Switzerland, Aug. 2, 1974, 10619/74; Jan. 16, 1975, 520/75

Int. Cl.³ A24B *15/40*

U.S. Cl. 131—277 **4 Claims**

1. A composition comprising a compound of formula (I):



(I)

in which:

(a) m and n stand for zero or 1, and each of symbols R^1 to R^8 represents a hydrogen atom or a saturated or unsaturated, linear or branched alkyl radical containing from 1 to 11 carbon atoms, or

(b) n stands for 1 and m represents zero or 1, each of symbols R^1, R^2, R^3 and R^4 have the above described meaning, R^5 and R^7 each represents hydrogen and R^6 together with R^8 and the carbon atoms carrying them, in positions 5 and 6 respectively, form a substituted or unsubstituted cyclopentane or cyclohexane ring, or

(c) n stands for 1 and m represents zero or 1, each of symbols R^1, R^3, R^5, R^6 and R^7 represents hydrogen, R^2 represents a lower alkyl radical or hydrogen atom, R^4 represents a para-substituted or unsubstituted phenyl or a substituted or unsubstituted cyclohexenyl radical, and R^8 stands for a lower alkyl, or

(d) n stands for 1 and m represents zero or 1, each of symbols R^1, R^3, R^5, R^6 and R^7 represents hydrogen, R^2 a p-substituted or unsubstituted phenyl or a substituted or unsubstituted cyclohexenyl radical, R^4 represents a lower alkyl radical or a hydrogen atom, and R^8 stands for a lower alkyl or a hydrogen;

and a tobacco product.

4,364,401
METHOD FOR SELECTIVE DENITRATION OF TOBACCO

Gus D. Keritsis, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 127,386, Mar. 5, 1980, Pat. No. 4,301,817. This application Mar. 5, 1981, Ser. No. 240,981

Int. Cl.³ A24B *3/18, 15/18, 15/22, 15/24*

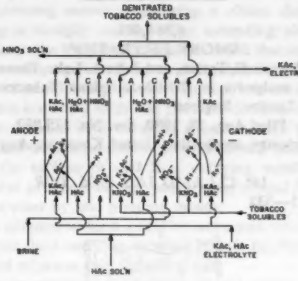
U.S. Cl. 131—297 **4 Claims**

1. A method of selectively removing nitrate ions from tobacco without substantially reducing the potassium ion level comprising:

(a) contacting a tobacco material with an aqueous solution to form an aqueous extract having a solids content of about 5–50% and a resistivity of 8–50 ohm-cm and an insoluble tobacco residue;

(b) separating the aqueous extract from the insoluble tobacco residue;

(c) selectively denitrating the separated aqueous extract by circulation through cells of an electrodialysis unit having anion permeable membranes toward both the anode and the cathode said extract cells being paired with cells



through which brine is circulated, said brine cells being adjacent the extract cells on the anode side and having a cation permeable membrane toward the anode, and said cell pairs being separated by cells through which an acid solution is circulated, said acid having an anion which forms soluble salts with polyvalent cations; and

(d) combining the denitrated aqueous extract obtained from step (c) with the insoluble tobacco residue which was removed from the aqueous extract in step (b).

4,364,402
APPARATUS FOR AUTOMATIC COMPENSATION OF WEAR UPON ORBITING KNIVES IN TOBACCO CUTTING MACHINES OR THE LIKE

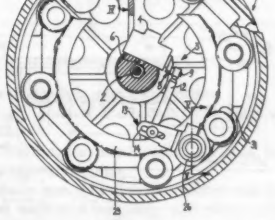
Werner Komossa, Börnsen, and Uwe Elsner, Dassendorf, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed May 15, 1980, Ser. No. 149,975

Claims priority, application Fed. Rep. of Germany, May 29, 1979, 2921665

Int. Cl.³ A24C *7/04, 3/07, 7/12, 7/14*

U.S. Cl. 131—311 **12 Claims**



1. Rotary cutting apparatus for use in a tobacco cutting machine adapted to compensate for knife wear, comprising at least one knife which is mounted on and is movable with respect to a rotary holder, a transmission mounted on said holder and having input means comprising a rotary crankshaft, means for rotating said crankshaft to response to rotation of said

holder, output means including a rotary element, and motion transmitting means for intermittently moving said output means in response to movement of said input means, said motion transmitting means including a pivotable member, means for pivoting said member in first and second directions in response to rotation of said crankshaft and means for driving said rotary element in response to the pivoting of said member in said first direction; and displacing means for moving said knife in response to intermittent movements of said output means.

4,364,403

SMOKE FILTRATION

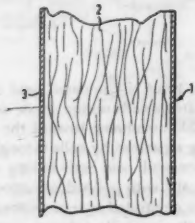
Henry G. Horsewell, Totton, and John A. Luke, Romsey, both of England, assignors to British-American Tobacco Company Limited, London, England

Filed Aug. 18, 1980, Ser. No. 178,882

Claims priority, application United Kingdom, Aug. 28, 1979, 7929768

Int. Cl.³ A24D *3/02, 3/06, 3/18*

U.S. Cl. 131—332 **10 Claims**



1. Smoke filter rod which comprises a rod-form body comprising smoke-filtration material which has been enwrapped in a fibrous or filamentary paper-type plugwrap separate from and non-integral with the body of smoke-filtration material and comprising at least 50% by weight of fibres or filaments of thermoplastics material.

4,364,404

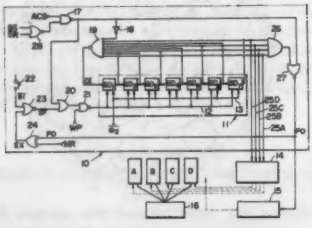
INVENTORY DEVICE IN AUTOMATIC VENDING MACHINE

Yukichi Hayashi; Masauuki Tamura; Osamu Sugimoto, all of Sakado; Masayoshi Takizawa, Kitamoto; Tatsujiro Nishioka, Yokohama; Masaki Akagawa, Sakado, and Yutaka Yokohda, Niiza, all of Japan, assignors to Kabushiki Kaisha Nippon Coicno, Tokyo, Japan

Filed Oct. 15, 1980, Ser. No. 197,212

Int. Cl.³ G07D *1/00*

U.S. Cl. 133—4 A **4 Claims**



1. An inventory device in an automatic vending machine which comprises:

a shift register in which a single signal "1" is shifted successively in response to the operation of one inventory switch; and

coin delivering means for controlling, in response to a bit output of said shift register, the coin dispensation of a corresponding coin containing cylinder,

whereby coins contained in a plurality of coin containing cylinders are dispensed by the operation of said one inventory switch.

4,364,405

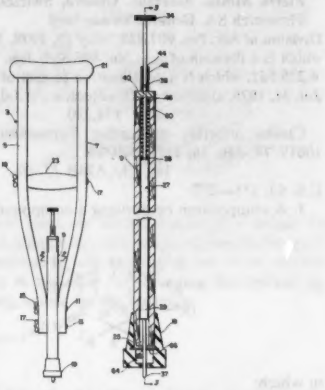
CRUTCH CONTAINING A RETRACTABLE METAL POINT

Robert F. Norwood, 474 Main St., and Robert S. Harper, 86 Highland Ave., both of Greenfield, Mass. 01301

Filed Oct. 16, 1980, Ser. No. 197,690

Int. Cl.³ A61H *3/02*

U.S. Cl. 135—70 **5 Claims**



1. In an adjustable crutch comprising an arm rest, longitudinal support members, a handle between said longitudinal support members, a lower central member adjustably positioned between said longitudinal support members and means for securing said central member between said longitudinal members, the improvement wherein said lower central member comprises:

an elongated element having a longitudinal bore,

a metal cap at the upper end of said elongated element, said metal cap having an aperture in axial alignment with said longitudinal bore,

means for securing said metal cap to said elongated element,

an open-ended hollow cylindrical hub connected to said metal cap, the openings in said hub being in axial alignment with the aperture in said metal cap, said hub having at least one longitudinal slot,

a first retractable elongated metal rod provided at one end with a point, said first retractable elongated metal rod being positioned in said longitudinal bore so that said pointed end projects below the bottom end of said element,

a second retractable elongated metal rod of reduced diameter relative to the diameter of said first elongated metal rod connected at one end to the other end of said first elongated metal rod and being in longitudinal alignment therewith, said second elongated metal rod extending through the aperture in said metal cap and hub,

spring means circumscribing said elongated metal rod and extending between said metal cap and said first elongated metal rod for applying spring loading to said first elongated metal rod when in projected position,

a pin connected to said second elongated metal rod, said pin projecting radially, outwardly through the slot of said hub,

locking means for said pin located at the top of said hub,

means connected to the other end of said second elongated

metal rod for manually pulling said second elongated metal rod to simultaneously retract said first elongated metal rod, compress said spring means and bring said pin into locking position,

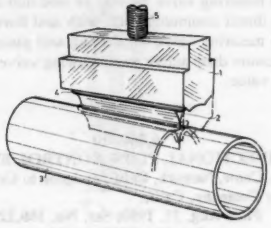
a resilient end cap having an axial bore frictionally positioned over the end of said elongated element, said resilient cap including a centrally apertured metal plate disposed in the lower portion thereof transversely to the axis of said bore, said central aperture being of reduced diameter so as to closely receive the pointed end of said first elongated metal rod.

4,364,406

METHOD AND DEVICE FOR ESTABLISHING A FLOW CONNECTION WITH A PIPE

Jan O. Bohlin, Hamnviksvägen 55, Nynäshamn, Sweden (S-149 00)

Filed May 20, 1980, Ser. No. 151,725
Claims priority, application Sweden, May 22, 1979, 7904505
Int. Cl.³ F16L *55/07*; F16K *43/00*; B23P *15/00*
U.S. Cl. 137—15 **12 Claims**



1. A method of establishing fluid communication between a fluid carrying member and at least one conduit comprising the steps of:

(a) sealingly enclosing a section of said fluid carrying member within a housing comprised of at least two members sealingly secured to one another, one of said at least two housing members having a channel therein extending to an outer surface of said fluid carrying member and disposed perpendicular to the axis of said fluid carrying member, said channel being further provided with a means for communicating with said conduit in the vicinity of said fluid carrying member;

(b) placing a piston within said channel, said piston having a lower portion which forms a longitudinally extending means for piercing a fluid carrying member arranged parallel to and disposed toward the axis of said fluid carrying member and providing said piston with a shoulder at its lower portion above said piercing means, said shoulder being configurationally commensurate with the surface of said fluid carrying member;

(c) generating a means to rapidly propel said piston toward said fluid carrying member to cause said piercing means to penetrate said fluid carrying member and form an elongated slot with a pair of opposed parallel edge portions bent inwardly with said portions directed toward the center of said fluid carrying member and restricting further penetration of said fluid carrying member by contacting said shoulder against said fluid carrying member; and

(d) arranging said piston in said slot to alter the rate of flow of fluid from said fluid carrying member into said conduit, providing said piston with a means to seal the elongated slot when said piston is arranged in the elongated slot so as to suspend fluid flow, which seal means is located adjacent said shoulder.

5. A device to establish fluid communication between a fluid carrying member and at least one conduit comprising:

a housing comprised of at least two members sealingly joined to each other, said housing having a longitudinal aperture to sealingly receive and secure a section of fluid carrying member, said housing also having a channel disposed perpendicular to and communicating with said longitudinal aperture and at least one conduit communicating with said channel;

means for sealingly joining each of said at least two housing members to each other;

a piston movably positioned within said channel, said piston having at its lower end a longitudinally extending means for piercing a fluid carrying member arranged parallel to and disposed toward the longitudinal axis of said aperture, said piercing means comprising a chisel shaped blade having a straight cutting edge extending along a line parallel to the longitudinal aperture such that said piercing means is arranged to form an elongated slot and a pair of opposed parallel edge portions in said fluid carrying member bent inwardly with said portions directed toward the center of said fluid carrying member, said piston also provided with a shoulder configurationally commensurate with the surface of said fluid carrying member, which shoulder prevents further penetration of said fluid carrying member by said piercing means;

a means adapted to form a seal between said piercing means and said fluid carrying member after it has been pierced, located adjacent said shoulder; and

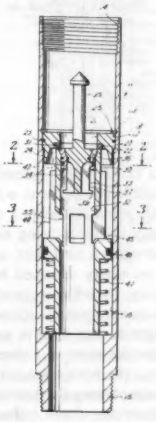
a means for adjusting the position of said piston within said channel.

4,364,407

MUD SAVER VALVE

David R. Hilliard, P.O. Box 15036, Baton Rouge, La. 70895

Filed Feb. 23, 1981, Ser. No. 237,248
Int. Cl.³ E21B *7/00*
U.S. Cl. 137—71 **10 Claims**



1. A mud saver valve, which comprises:

a tubular body connectable between the kelly and the drill string:

an annular seat ring mounted within said body, said seat ring having a central opening;

a piston axially movably disposed within said body for engagement with said seat ring, said piston having a bore substantially coaxially aligned with said central opening and a flange extending radially outwardly from said piston to slidingly engage the interior of said body, said piston having a port above said flange communicating the exterior of said piston with said bore;

a plug removably mounted in said piston above said port to normally close said bore, said plug including a shear ring removably inserted in said bore with a shear pin shear-

ingly connecting said shear ring with said piston, and a spear axially movably mounted in said shear ring for movement between a first position wherein said spear sealingly engages said shear ring and a second position to allow fluid to flow upwardly between said spear and said shear ring;

and means for urging said piston into engagement with said seat ring.

4,364,408

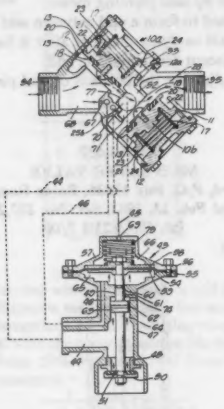
BACKFLOW PREVENTION APPARATUS

David E. Griswold, Corona Del Mar, and Richard E. Veit, Arcadia, both of Calif., assignors to Griswold Controls, Irvine, Calif.

Division of Ser. No. 10,934, Feb. 9, 1979, Pat. No. 4,244,392, which is a division of Ser. No. 410,173, Oct. 26, 1973, abandoned. This application Sep. 2, 1980, Ser. No. 183,584

Int. Cl.³ E03C *1/10*

U.S. Cl. 137—107 **5 Claims**



1. For use with two check valve assemblies connected in series and defining a zone between them, a differential control valve having a housing provided with a valve seat, a stem mounted to move axially in the housing and having a valve head movable to close against said seat, a cover, a flexible diaphragm having its periphery clamped between the cover and the housing and acting to define a chamber in the housing and a chamber in the cover, means connecting the central portion of the diaphragm to the stem, a spring in the cover chamber acting to move the stem in a direction to open the valve, a discharge port in the zone connected to said housing, a pressure sensing line connecting the housing chamber to the upstream side of the upstream check valve assembly, means connecting the cover chamber to reflect the pressure in said zone, and a balance piston fixed on the stem slidably mounted within the housing to balance the fluid pressure force from the zone tending to move the valve head away from the valve seat.

4,364,409

FLUID FLOW CONTROL DEVICE

James S. Jones, 45 Crown Pl., Richardson, Tex. 75080

Filed Aug. 18, 1980, Ser. No. 178,767

Int. Cl.³ G05D *7/01*

U.S. Cl. 137—486 **9 Claims**

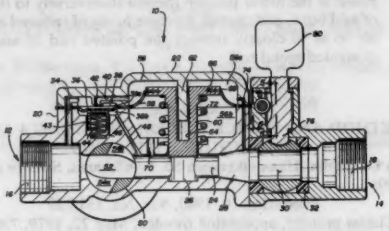
1. A device for controlling the flow of a fluid delivered from a pressurized source comprising:

a housing having a straight bore extending therethrough;

a manually settable metering valve disposed in said bore, to select a flow rate;

a piston movable into and out of said bore downstream of said metering valve; and

first control means disposed in said housing in fluid communication with said bore upstream and downstream of said metering valve and second control means disposed in said



housing in fluid communication with said bore upstream of said metering valve by way of said first control means and in direct communication with said bore downstream of said metering valve for driving said piston to maintain the pressure drop across said metering valve at a predetermined value.

4,364,410

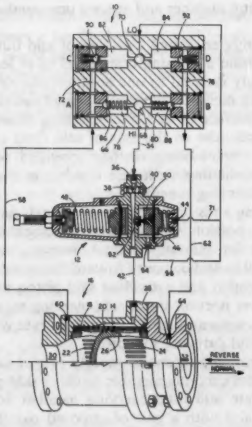
BI-DIRECTIONAL FLOW CONTROL SYSTEM

Peter C. M. Chow, Newark, Calif., assignor to Grove Valve and Regulator Company, Calif.

Filed Aug. 21, 1980, Ser. No. 180,229

Int. Cl.³ G05D *16/00*

U.S. Cl. 137—489 **4 Claims**



1. A bi-directional pipeline pressure control system comprising:

a main control valve adapted for connection into a pipeline and having flow passages at opposite ends thereof and a pressure control chamber;

a pilot valve for said control chamber including an inlet port connected to a high pressure line, a load port connected to said pressure control chamber; and a dumping port connected to a low pressure line;

a first pair of branch lines connected between one of said main valve flow passages and said high and low pressure lines;

a second pair of branch lines connected between the other of

said main valve flow passages and said high and low pressure lines; and

first and second pairs of one-way check valves in said first and second pairs of branch lines, one check valve of each pair thereof being conditioned to enable flow only from one of said main valve flow passages to said high pressure line and the other of said pair being conditioned to enable flow only from said low pressure line to said one main valve flow passage.

4,364,411

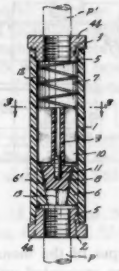
LIQUID LINE THERMAL BARRIER

Kenneth J. Payton, 9251 NE. 178th, and Jay O. Payton, 21909-49th Ave. SE., both of, Bothell, Wash. 98011

Filed Jul. 21, 1980, Ser. No. 170,792

Int. Cl.³ F16K *49/00*

U.S. Cl. 137—513.5 **3 Claims**



1. A thermal barrier comprising a hollow body forming a liquid duct having a liquid inlet and a liquid outlet and having a seat between said liquid inlet and said liquid outlet; a stop engageable with said seat to obstruct said duct, said stop being of substantial extent lengthwise of said duct and engageable with said seat over a considerable area and said body and said stop being constructed of thermal insulating plastic material having such a low thermal conductivity that when said stop is in engagement with said seat a substantial extent of such material is interposed between said liquid inlet and said liquid outlet so that said liquid inlet is thereby substantially thermally isolated from said liquid outlet; and small elongated duct means having a length a multiplicity of times its width bypassing said stop so that liquid within said elongated duct means can conduct a limited amount of heat across said stop when said stop is in engagement with said seat, said stop being biased into engagement with said seat and responsive to pressure on the inlet side thereof to open it, said stop including a frustoconical surface, said seat including a frustoconical surface tapered lengthwise of said duct and complemental to said frustoconical surface of said stop which surfaces abut when said stop is in engagement with said seat.

4,364,412

PULL TYPE RELAY VALVE WITH AUTOMATIC LOCKOUT

Clifford M. Peters, Longview, Tex., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Nov. 10, 1980, Ser. No. 205,846

The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.

Int. Cl.³ F15B *13/042*

U.S. Cl. 137—557 **7 Claims**

1. A valve for controlling the flow of a first fluid to a fluid controlled device in response to pressure changes in a second fluid, said valve comprises:

an elongate valve body presenting a longitudinal bore therein, said bore having an enlarged diameter inner end portion defining a piston chamber in said valve body and a reduced diameter ore portion joined with said piston chamber by an annular shoulder;

a second fluid port in a side portion of said valve body adjacent said piston chamber for sensing the pressure of said second fluid, said second fluid port directly communicating with said reduced diameter bore portion;

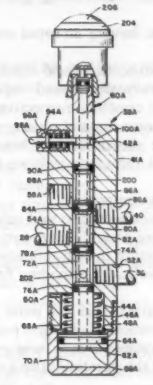
a supply port in said valve body axially outward of said second fluid port for directing the incoming first fluid to said bore;

an outlet port in said valve body axially outward of said supply port for receiving the first fluid from said bore for application to the fluid controlled device;

a bleed port in said valve body axially outward of said outlet port for exhausting the first fluid from said bore;

a slide valve mounted in said bore for longitudinal movement between an open position for directing the first fluid to the fluid controlled device and a closed position for bleeding the first fluid from the fluid controlled device, said side valve having an outer end extending outwardly of said valve body having a knob thereon for manually pulling said slide valve outwardly from the closed position to the open position for manual setting of said slide valve;

said slide valve having a trio of reduced diameter positions, an inner reduced diameter valve portion providing an inner annular space in continuous communication with said second fluid port, a mediate reduced diameter valve portion positioned axially outward of said inner reduced diameter



valve portion providing a mediate annular space in fluid communication with said supply port and said outlet port in the open position of said slide valve, and an outer reduced diameter valve portion positioned axially outward of said mediate reduced diameter valve portion providing an outer annular space in fluid communication with said bleed port and said outlet port in the closed position of said slide valve;

biasing means, contained within said piston chamber, for biasing said slide valve inward towards the closed position;

a piston carried in said piston chamber on an inner end portion of said slide valve, said piston presenting an inwardly facing pressure face for receiving the second fluid to hold said slide valve in the open position against the force of said biasing means; and

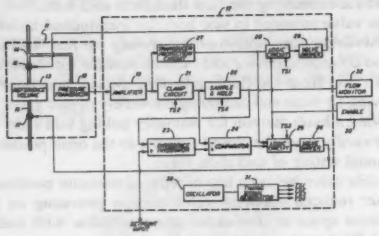
a fluid passage in said slide valve for directing the second fluid to said piston chamber for application to said pressure face, said passage extending to said pressure face and having an inlet port formed in a side portion of said slide valve at a location in fluid communication with said second fluid port when said slide valve is in the open position, whereby the second fluid pressure is applied from said second fluid port through said inlet port and said fluid passage to said piston chamber and against said pressure face of said piston to hold said slide valve in the open position when the second fluid

pressure is sufficient to overcome the force of said biasing means.

4,364,413
MOLAR GAS-FLOW CONTROLLER

Richard L. Bersin, and William H. Clouser, both of Norwalk, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 7, 1981, Ser. No. 223,197
Int. Cl.[3] G01F *1/34*
U.S. Cl. 137—624.2 9 Claims



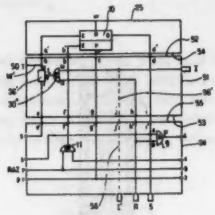
1. An apparatus for controlling gas flow, comprising in combination,
- a reference volume having an input conduit and an output conduit,
- a source of gas connected to said input conduit,
- first and second normally closed valves disposed in said input and output conduits, respectively,
- control means for opening and closing said first and second valves to cause the difference between high and low pressures in said reference volume to equal a predetermined value,
- said control means comprising,
- transducer means connected to said reference volume and a reference pressure providing an output voltage representative of the pressure in said reference volume,
- generator means cyclically providing first, second, third and fourth pulses,
- first means responsive to said first pulse for opening said first valve for the duration of said first pulse, once each cycle,
- second means responsive to said third pulse for opening said second valve for the duration of said third pulse once each cycle,
- third means for closing said second valve when said output voltage equals a predetermined value.

4,364,414
PNEUMATIC PHASE MODULE LOCKING DEVICE

Daniel Bouteille, Ville D'Avray; Hugues Marguet, Paris, and Eric Petrimaux, Evreux, all of France, assignors to La Telemecanique Electrique, France

Filed Jul. 28, 1980, Ser. No. 172,810
Int. Cl.[3] G05D *16/04*
U.S. Cl. 137—624.14 6 Claims

1. In a pneumatic circuit for the automatic control of a sequence of programmed operations, said pneumatic circuit comprising a plurality of cascade-mounted phase modules, each of said modules controlling a programmed operation of the sequence and comprising: a bistable pneumatic memory contained in a removable housing having a bearing face provided with first fluid communication orifices; a base having a fixing surface provided with second communication orifices which are adapted to cooperate with the first communication orifices when the said bearing face is applied on said fixing surface, the respective bases of the said cascade-mounted modules being mounted adjacent to each other, said memory having a control input for putting it in logic state "1", a cancelling input for putting it in a logic state "0" and an output for feeding a signal which controls a programmed operation, said base comprising first channels capable of cooperating with the corresponding first channels of adjacent bases of said cascade-monted phase modules to convey a feed pressure to the phase modules, second channels for transmitting control signals to the adjacent base of the following phase module of the pneumatic circuit, fluid channels for sending a cancelling signal to the adjacent base of the preceding phase module of the pneumatic circuit, fourth channels for transmitting general re-set to zero signals to the phase module; each phase module further comprising: an AND gate having first and second inputs and an output, the first input of the AND gate being fed by cancelling signals resulting from the performance of the programmed operation controlled by the said phase module and the second input of the AND gate being fed by the output of the said memory, the output of the AND gate transmitting a control



signal to the control input of the memory of the following module; a locking device associated with each of said phase modules and comprising:

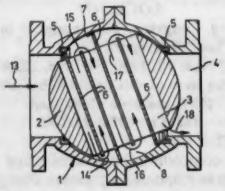
(i) a pneumatic selector member having an output and first and second inputs and

(ii) a pneumatic inhibitor member having a locking input fed by the output of the pneumatic selector member, and a transfer channel connecting the output of the preceding phase module to the control the input of the said memory, closure means cooperating with said transfer channel and control means, actuated by the fluid pressure, for controlling the said closure means to interrupt the circulation of fluid in the transfer channel at the said locking input, the first input of the pneumatic selector member being fed from the said cancelling signals and the second input being adapted to receive auxiliary cancelling signals.

4,364,415
METHOD FOR ATTENUATING A MEDIUM FLOW PASSING THROUGH A VALVE AND A VALVE FOR APPLYING THE METHOD

Juhani Polon, Helsinki, Finland, assignor to Neles Oy, Helsinki, Finland

Filed Aug. 19, 1980, Ser. No. 179,567
Claims priority, application Finland, Jun. 27, 1980, 802046
Int. Cl.[3] F16K *5/06, 5/10*
U.S. Cl. 137—625.32 6 Claims



1. An attenuating valve assembly comprising: a valve body

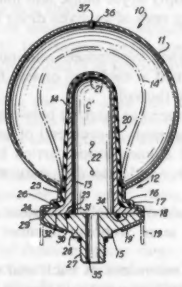
having a flow passage formed therethrough; a closure member, having means defining a through-extending bore therein; means for mounting said closure member in said valve body for rotation about an axis with respect to said valve body between a completely open position wherein said closure member allows passage of fluid therepast through said flow passage, and a completely closed position wherein said closure member blocks all flow through said flow passage; sealing means provided in said valve body flow passage for operatively engaging said closure member for preventing fluid flow through said flow passage past said closure member once the closure member is in said closed position; means for attenuating fluid flowing through said flow passage past said closure member, without significantly restricting flow once said closure member is in said completely open position, said attenuating means comprising a plurality of solid attenuator parallel plates; and means for mounting said attenuator plates with respect to said closure member so that as said closure member is being closed, the closer it comes to being closed the longer the flow path of fluid through the closure member becomes, and the more the closure is opened the shorter the flow path through the flow member becomes, said mounting means mounting said plates within said bore through said closure member so that each plate extends outwardly from said bore at one end thereof.

4,364,416

LOW COST ACCUMULATOR DEVICE

A. A. Jacobellis, Woodland Hills, and Abduz Zahid, Los Angeles, both of Calif., assignors to VSI Corporation, Pasadena, Calif.

Filed Sep. 25, 1981, Ser. No. 305,522
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 **4 Claims**



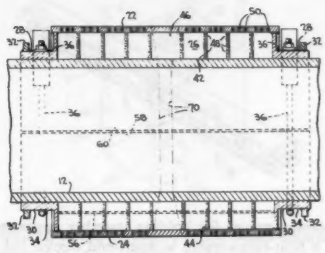
1. As a new article of manufacture a low cost light weight hydraulic accumulator device comprising a unitary metallic shell defining a pressure vessel, said shell including a spherical reservoir, a generally cylindrical neck portion extending from said reservoir, said neck portion including a radially outwardly extending flange, a rim extending downwardly from said flange in the direction of the axis of said neck portion, a stop shoulder extending radially from said rim portion, a rigid hollow generally cylindrical casing extending into said reservoir, said casing including throughgoing perforations, a radially directed flange on said casing having an upper surface engaging said stop shoulder and a lower surface, a mounting fixture including an oil port supported in said neck portion, said fixture having a downwardly facing base portion and an upper surface portion engaging said lower surface of said flange of said casing, inturned portions of said neck portion underlapping said base portion of said fixture to clampingly support said fixture and the flange of said casing between said stop shoulder and inturned portions, and a resilient distensable generally cylindrical elastomeric bladder member disposed over said casing and dividing said reservoir into two chambers, said bladder member having a thickened rim portion defining a mouth, said bladder including portions disposed in an annular space defined between said neck and said casing, said thickened rim portion being clamped in an axially compressed condition between said flange of said neck and said upper surface of said flange of said casing to thereby define a seal between said casing and said vessel at said neck portion.

4,364,417

PIPE RUPTURE RESTRAINT AND JET SHIELD DIFFUSER ASSEMBLY

Jan D. Lefter, Bayside, N.Y., assignor to NPS Technologies, Inc., Secaucus, N.J.

Filed Aug. 19, 1980, Ser. No. 179,441
Int. Cl.³ F16L *57/00*
U.S. Cl. 138—42 **16 Claims**



1. A pipe rupture restraint and jet shield diffuser assembly for installation on a pipe at a location where the pipe is subject to rupture comprising

a cylindrical casing surrounding the pipe to define an annular space therebetween, said casing having holes therethrough extending substantially transverse to the longitudinal axis of said casing; and

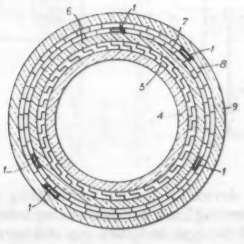
a plurality of diffuser rings disposed in longitudinally spaced relation in said annular space to form flow obstructions along said annular space whereby upon rupture of the pipe jet flow is diffused by flow past said diffuser rings and through said holes in said casing.

4,364,418

FLEXIBLE TUBULAR CONDUIT

Maurice Genini, Creteil; Christian Athe, Le Mee, and Jean-Paul Aubert, Puteaux, all of France, assignors to Coflexip, Rueil Malmaison, France

Filed Apr. 6, 1979, Ser. No. 27,719
Claims priority, application France, Apr. 17, 1978, 78 11230
Int. Cl.³ F16L *11/08*
U.S. Cl. 138—103 **10 Claims**



1. A flexible tubular conduit comprising a side wall, and means in said side wall for containing therein a control line, said means comprising at least one hollow wire comprising a metal strip bent into the form of a quadrangular casing with

one side thereof having overlapping unjoined extremities, said wire extending a substantial distance along the length of said conduit for receiving the control line.

4,364,419

HEAT-RECOVERABLE WRAPAROUND CLOSURE

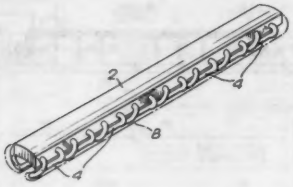
Jean-Marie E. Nolf, Hamme-mille, Belgium, assignor to Raychem Corporation, Menlo Park, Calif.

Filed Mar. 4, 1981, Ser. No. 240,528

Claims priority, application United Kingdom, Mar. 14, 1980, 8008703

Int. Cl.³ A44B *21/00*

U.S. Cl. 138—167 21 Claims



1. Fastening means for holding together opposite edge regions of a heat-recoverable wraparound sleeve, the fastening means comprising:

an elongate member which comprises a material that is substantially rigid at ambient temperature and that is flexible at the recovery temperature of the sleeve; and

a plurality of discrete clamping elements each having a pair of opposing generally U-shaped sections integrally interconnected, each of said U-shaped sections extending transversely from the elongate member and converging to engage said opposite edge regions of the wrap-around sleeve to hold said opposite edge regions together, said clamping elements being substantially rigid at the recovery temperature of the sleeve.

4,364,420

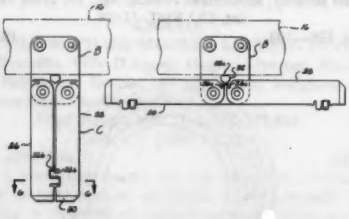
FOLDABLE NOSE GUIDE DEVICE FOR A HEDDLE FRAME

Charles F. Kramer, Greenville, S.C., assignor to Steel Heddle Manufacturing Company, Greenville, S.C.

Filed Mar. 23, 1981, Ser. No. 246,376

Int. Cl.³ D03C *9/06*

U.S. Cl. 139—91 8 Claims



1. A guide device for spacing and aligning adjacent heddle frames of a weaving loom during shedding wherein said heddle frames are of the type including top and bottom frame slats, said guide device comprising:

side plate means including attachment means for affixing said plate means to a heddle frame slat;

a pair of guide legs pivotally carried by said plate means terminating in free ends;

said guide legs being pivotable from a generally fixed guide position in which the legs depend downwardly to a generally fixed folded position;

first mean for fixing said legs in said guide position;

second means for maintaining said legs in said folded position; and

said free ends of said guide legs having a lesser relative vertical distance from said frame slat in said folded position than when in said guide position;

whereby said heddle frame may be placed on an automatic warp threading machine by manually positioning said guide legs in said folded position and thereafter said guide legs may be manually positioned in said guide position for utilization on said weaving loom machine without the need for removing said guide device from the slat when transferring said heddle frame between said machines.

4,364,421

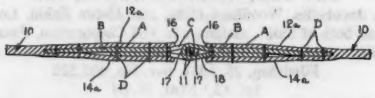
WOVEN TEXTILE DRYER FABRIC AND SEAM AND WEAVING METHOD

William R. Martin, Greenville, S.C., assignor to Wangner Systems Corporation, Greenville, S.C.

Continuation-in-part of Ser. No. 829,057, Aug. 30, 1977, abandoned. This application May 18, 1979, Ser. No. 40,104

Int. Cl.³ D03D *23/00*

U.S. Cl. 139—383 A 22 Claims



1. A woven multiply dryer fabric and pintle hinge seam for joining the opposing ends of a woven dryer fabric and the like, comprising:

a pair of separated superposed continuously woven ply extensions formed at each end of said fabric opening at a free outer edge thereof;

a seam webbing member inserted between each pair of said woven ply extensions at each end of said fabric;

a row of spaced aligned loops carried by each said seam webbing member and extending outwardly of a free edge thereof;

means securing said woven ply extensions at each end of said fabric to said seam webbing member inserted therebetween; and

said woven ply extensions at each end of said felt fabric tapering outwardly toward said spaced aligned loops, and having outer ends lying substantially flush with said aligned loops providing minimum interruption in the surface of the joint between said opposing ends of said fabric.

4,364,422

METHOD OF PRODUCING A NICKEL ELECTRODE

David J. Brown, and Michael Reid, both of West Midlands, England, assignors to Lucas Industries Limited, Birmingham, England

Filed Sep. 29, 1980, Ser. No. 191,757

Claims priority, application United Kingdom, Oct. 3, 1979, 7934242

Int. Cl.³ H01M *4/29, 4/30, 4/32*

U.S. Cl. 141—1.1 13 Claims

1. A method of producing a pressed nickel electrode comprising the sequential steps of:

(a) contacting nickel hydroxide powder with a solution containing cobalt ions and precipitating a cobalt compound from said solution onto the nickel hydroxide powder,

(b) mixing the nickel hydroxide powder containing said precipitated cobalt compound with a powdered conduc-

tive diluent and a powdered binder to form a resultant mixture, and

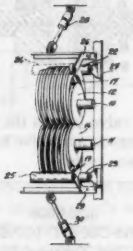
(c) pressing the resultant mixture into physical and electrical contact with a current collector.

4,364,423

ROTATING DISC SPLITTER

Walter W. Schilling, Delta, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Filed Oct. 21, 1980, Ser. No. 199,182
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—366 **8 Claims**



1. An apparatus for splitting a slab of wood into strands with longitudinal-grain extending along their length, comprising,

a first rotary shaft and a second rotary shaft whose axes are parallel,

a first series of spaced-apart circular discs centered on and secured to the first shaft,

a second series of spaced-apart circular discs centered on and secured to the second shaft, positioned so that the second series discs interfit in slightly overlapping relationship with the first series discs,

means for rotating the first shaft and the second shaft in counter rotating directions adapted to pull a slab of wood between the first and second series discs and split the slab into strands,

a first series of floating spacer rings on the first shaft interspaced between the first series discs, positioned to rest adjacent the second series discs when no slab passes therethrough,

a second series of floating spacer rings on the second shaft interspaced between the second series discs, positioned to rest adjacent the first series discs when no slab passes therethrough,

fixed roller means positioned upstream of the first and second shafts to prevent the first and second series spacer rings from moving upstream of the first and second series discs, and

pressure movable roller means positioned on the downstream side of the first and second shafts, adapted to permit the first and second series spacer rings to move away from the second and first series discs respectively when a slab is being split therebetween, said upstream and downstream roller means adapted to provide a point of contact between the floating rings and the wood strands which is downstream of the axes of said first and second shafts.

4,364,424

END WALL CLOSURE FOR BULK MATERIAL TRANSPORT BAG

Peter J. Nattrass, Fox River Grove, Ill., assignor to Bulk Lift International, Inc., Carpentersville, Ill.

Filed Jun. 29, 1981, Ser. No. 278,195
Int. Cl.³ B65D *29/02*
U.S. Cl. 150—1 **5 Claims**

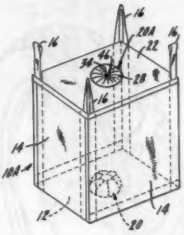
1. In a bag for transporting bulk materials, of the kind comprising an end wall joined to a plurality of side walls, all formed of strong, flexible material, and having a plurality of lifting loops mounted on the upper edges of the sidewalls, an improved reusable fill/discharge closure comprising:

an opening of diameter D in the end wall;

a fill/discharge tube of strong, flexible material having a diameter at least slightly larger than D and having a length L1;

a closure tube of strong, flexible material having a diameter at least slightly larger than D and having a length L2 no greater than D/2, with L1>L2;

the fill/discharge tube and the closure tube each having one



end secured to the periphery of the outlet opening in the end wall of the bag with the fill/discharge tube disposed inwardly of the closure tube and both projecting outwardly of the end wall of the bag;

a drawstring disposed in a peripheral pocket in the outer end of the closure tube;

and tie means for releasably closing the outer end of the fill/discharge tube;

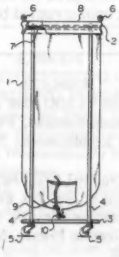
whereby the closed fill/discharge tube can be stuffed into the interior of the bag through the end wall opening and the drawstring tightened to form a flat openable closure for the end wall opening.

4,364,425

TOBACCO STORAGE BAG

Jacques Mainville, Kirkland, Canada, assignor to Benson & Hedges (Canada) Inc., Montreal, Canada

Filed Nov. 13, 1980, Ser. No. 206,657
Claims priority, application Canada, Nov. 15, 1979, 339960
Int. Cl.³ B65D *33/14*
U.S. Cl. 150—51 **13 Claims**



1. An apparatus for the storage of cut tobacco comprising a bag hung from a mobile supporting structure, the bag material comprising a mesh overlaid with a plastic finish, said bag having openings at the top and bottom for loading and unloading, at least the bottom opening being closeable, said bag being made of a material inert to tobacco, flexible and moisture retaining, said material having surface frictional characteristics and said bag having cross sectional dimensions such that a

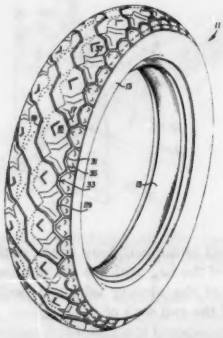
bridging effect is created within the stored tobacco between opposing inner surfaces of the bag along its length thereby reducing pressure in the tobacco near the bottom of the bag.

4,364,426

MOTORCYCLE TIRE TREAD

Anthony M. Mills, Williamsville, and Daniel C. Egan, Akron, both of N.Y., assignors to Dunlop Tire & Rubber Corporation, Buffalo, N.Y.

Filed Mar. 26, 1981, Ser. No. 247,873
Int. Cl.³ B60C *11/08*
U.S. Cl. 152—209 R **14 Claims**



1. A road use motorcycle tire comprising a rounded tread portion and sidewalls depending from said tread portion, said tread portion comprising a plurality of spaced diagonally extending tread blocks defined by a plurality of first grooves spaced circumferentially of said tire and extending generally diagonally across said tread portion and a pair of second grooves provided adjacent opposite width-wise sides of said tread portion and extending circumferentially of said tire, said first grooves channeling water from said tread portion toward said sidewalls and extending continuously from one side of said tread portion to the other, each said first groove comprising an intermediate portion at the width-wise center of the tread portion which extends substantially circumferentially of said tire and a pair of diagonally extending portions respectively connecting opposite ends of said intermediate portion to respective second grooves, the intermediate portions of two adjacent first grooves being spaced by a said tread block defined by said adjacent first grooves and said second grooves, said tread blocks being uninterrupted by any circumferentially extending groove.

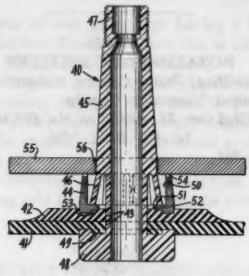
4,364,427

TIRE VALVES FOR TUBELESS AND TUBE TIRES

Jean Lefrancois, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissments Michelin, Clermont-Ferrand, France

Continuation of Ser. No. 101,632, Dec. 10, 1979, abandoned, which is a continuation of Ser. No. 891,467, Mar. 29, 1978, abandoned. This application May 20, 1981, Ser. No. 265,394
Claims priority, application France, Mar. 30, 1977, 77 09859; Oct. 18, 1977, 77 31544
Int. Cl.³ B60C *29/00, 5/00*
U.S. Cl. 152—349 **3 Claims**

1. A tire valve for tubeless tires having a valve body and a valve base, characterized by the fact that the valve body has a plurality of tongues integral with the valve body, the tongues being arranged as a conical surface around the periphery of the valve body for engagement with the outside of a wheel rim, the conical surface being open towards the valve base, the tongues being elastic in transverse direction and rigid in longitudinal direction, and free ends of the tongues being capable of moving in transverse direction and then resuming their initial shape, thus enabling an elastic sealing ring to be tightened between



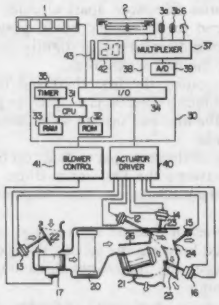
the valve base and a valve hole in the wheel rim; said valve body, including its tongues, and valve base being formed of an integrally molded plastic material.

4,364,428

AUTOMATIC AIR-CONDITIONING APPARATUS

Eiichi Ohtsu, Katsuta, and Takanori Shibata, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 6, 1980, Ser. No. 204,519
Claims priority, application Japan, Nov. 9, 1979, 54-144452; Mar. 19, 1980, 55-34074
Int. Cl.³ F25B *49/00*; G05D *23/00*
U.S. Cl. 165—11 R **10 Claims**



1. An automatic air-conditioning apparatus comprising:
at least one temperature sensor;
a temperature setting unit for setting a desired temperature;
a temperature display element for selectively displaying the temperature sensed by said temperature sensor and the temperature setting set by said temperature setting unit; and
a microcomputer carrying out necessary calculations for the purpose of temperature control and temperature display on the basis of the output signals from said temperature sensor and said temperature setting unit, said microcomputer including first means for displaying the temperature setting for a predetermined period of time on said temperature display element when said temperature setting unit is manipulated and second means for inhibiting said first means from displaying the temperature setting on said temperature display element until the difference between a temperature setting data resulting from manipulation of said temperature setting unit and the presently established temperature setting data established already as operation data exceeds a predetermined value.

4,364,429

AUTOMATIC TEMPERATURE CONTROL SYSTEM FOR VEHICLE AIR CONDITIONERS

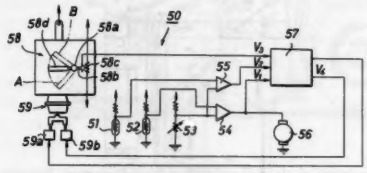
Yukinobu Nakamura, Asaka; Tsuneo Nakajima, Kawagoe; Toru Atsumi, Kamifukuoka, and Kunitaka Sakai, Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1981, Ser. No. 256,116

Claims priority, application Japan, Apr. 21, 1980, 55-54325[U]

Int. Cl.³ F25B *29/00*; F25D *17/00*

U.S. Cl. 165—28 10 Claims



1. An automatic temperature control system for a vehicle air conditioner including a cool air supply mechanism having air flow control means; air flow dividing means for dividing a cool air flow supplied from said cool air supply mechanism into a primary flow and a secondary flow; a heat source for heating said primary flow; and a mixing mechanism for mixing said primary flow as warmed past said heat source and said secondary flow with each other; comprising a first circuit for sensing and outputting as a first signal an air temperature inside a vehicle interior; a second circuit for sensing and outputting as a second signal an air temperature outside said vehicle interior; a third circuit for providing a third signal corresponding to a preset temperature; a fourth circuit interlocked with said air flow dividing means for outputting as a fourth signal the flow-dividing ratio thereof; a fifth circuit for comparing said first signal with said third signal and providing a fifth signal; a sixth circuit for comparing said second signal with said third signal and providing a sixth signal; a seventh circuit for comparing said fourth, fifth and sixth signals with one another and providing a seventh signal to-determine the mixing ratio of said primary flow and said secondary flow; said air flow control means being controlled by said fifth signal; and said air flow dividing means being controlled by said seventh signal.

4,364,430

ANCHOR POSITIONER ASSEMBLY

David D. Szarka, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 24, 1980, Ser. No. 209,620

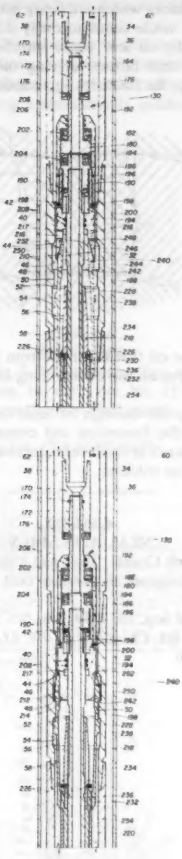
Int. Cl.³ E21B *23/02*

U.S. Cl. 166—214 22 Claims

15. An anchor positioner suitable for attachment to a tool string disposed in a well bore, comprising:

spring arm means; and

indexing head means having inclined face means radially spaced with axial groove means, said spring arm means being positively retracted by contact with said inclined face means, and positively extended by contact with said



axial groove means in response to reciprocation of said tool string.

4,364,431

METHOD FOR RECOVERING OIL FROM AN UNDERGROUND FORMATION

Ali M. Saidi, Paris, France, and Frans T. Hesselink, Rijswijk, Netherlands, assignors to National Iranian Oil Company, Tehran, Iran and Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

Filed Dec. 17, 1980, Ser. No. 217,445

Int. Cl.³ E21B *43/22*

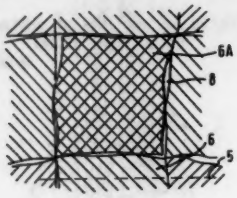
U.S. Cl. 166—275 4 Claims

1. A method for recovering oil from an underground formation consisting in part of oil-wet permeable blocks having a pore space with capillary channels at least partially containing oil, said permeable blocks being surrounded by a fluid filled fracture network, said method comprising the steps of:

(a) compounding an aqueous solution of a surfactant having the ability to decrease the surface tension between water and the oil present in the blocks;

(b) supplying said solution through at least one injection well to the fracture network in order to displace the fluids in

the fracture network above the level of the aqueous solution in a substantially vertical direction, thereby raising the hydrostatic head in the fractures surrounding the individual blocks which are being submerged in the aqueous solution while simultaneously decreasing the surface tension of the oil and water interfaces in the capillary channels of said blocks, driving oil from the capillary channels into the fractures surrounding said blocks:



(c) allowing the oil that is driven from the blocks to collect in the fractures on top of the rising level of aqueous solution; and

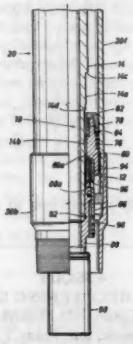
(d) recovering oil through at least one production well penetrating the formation and communicating with the fracture network at the level where oil is collecting on top of the aqueous solution.

4,364,432

SEAL ASSEMBLY

C. Joe Bass, Harris County, Tex., and Elmer R. Peterson, Anaheim, Calif., assignors to Hughes Tool Company, Houston, Tex.

Filed Sep. 15, 1980, Ser. No. 187,383
Int. Cl.³ E21B *23/04, 33/14*
U.S. Cl. 166—290 **22 Claims**



18. A method of cementing liners in wells comprising the following steps:

(a) positioning a liner in a well bore connected to a setting tool suspended from a pipe string and extending into the liner and sealed thereto by a seal assembly mounted on the setting tool;

(b) anchoring the liner in the well bore and releasing the setting tool from the liner;

(c) circulating fluid into the well bore through the liner to cement the liner to the well bore;

(d) providing said seal assembly with releasable lock means for maintaining said seal assembly fixed relative to at least one of said setting tool and liner, said lock means releasing said seal assembly for axial movement relative to said setting tool and liner in a first sense in response to fluid pressure differential acting on said seal assembly in said first axial direction sense to communicate fluid along the region between the liner and the setting tool, and

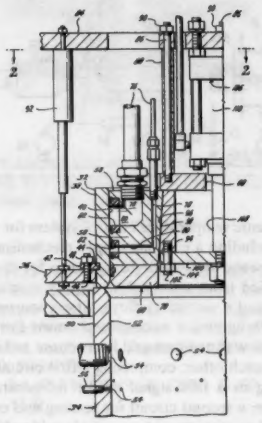
(e) removing the setting tool and the seal assembly.

4,364,433

REMOTE CONNECTION APPARATUS

Edmund A. Fisher, Houston, and John S. Platou, Crosby, both of Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Oct. 15, 1980, Ser. No. 197,114
Int. Cl.³ E21B *43/01*; F16L *19/06*
U.S. Cl. 166—339 **7 Claims**



1. A remote connection apparatus comprising

a plurality of segments each having a sealing surface with ports therein and a tapered surface opposite said sealing surface,

a segment support in which said segments are positioned and movable in a radial direction,

cam means coacting with the tapered surface of said segments to move said segments toward a sealing position,

means supported between said segments and said segment support to urge said segments in a direction away from sealing position,

a test ring having a sealing surface,

means for moving said segments, said segment support and said cam means vertically to bring said segments to a first position radially spaced from said test ring sealing surface and to a second position radially spaced from the preselected mating surface of a remote member.

4,364,434

GROUND-RAKING, ROCK-GATHERING ATTACHMENTS FOR TRACTORS

Gary W. Erholm, 2309 "A" S. Tacoma Way, Tacoma, Wash. 98409

Filed Aug. 31, 1981, Ser. No. 297,717
Int. Cl.³ A01B *43/00*
U.S. Cl. 171—63 **11 Claims**

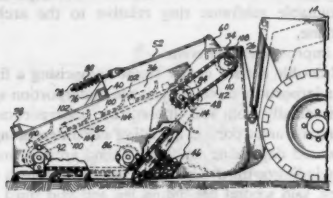
1. A ground-raking and rock-gathering attachment for a tractor bucket of a type which is rotatable forwardly from the tractor about a first axis, for unloading material from said bucket, said attachment comprising:

a frame;

means for mounting said frame onto the bucket for pivotal movement relative to said bucket about a second axis which extends parallel to the first axis;

power driven rake means on said frame, adapted to rake rocks into the bucket when the frame means is lowered and the tractor is backing up;

a first passive tension member interconnected between an upper portion of said frame and an upper portion of the tractor bucket, to provide a resilient interconnection between the frame and the bucket, serving to limit the extent of pivotal movement of the frame in a downward direction about said second axis, but being collapsable to allow pivotal movement of the frame about the second axis in the upward direction and;



a second passive tension member which is interconnected between the upper portion of said frame and an upper frame portion of the tractor, said second passive tension member being slack when the attachment is being used for ground-raking and rock-gathering but being in tension when the bucket and attachment are raised off the ground, and that time serving to the attachment while the bucket is being rotated relative to the attachment, for dumping debris.

4,364,435

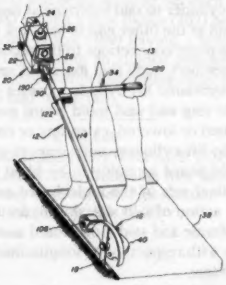
LAWN EDGER

Lloyd H. Tuggle, Shreveport; Ronald C. Loyd, Keithville, and Lee R. Walker, Shreveport, all of La., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 22, 1980, Ser. No. 218,560

Int. Cl.³ A01D *33/18*

U.S. Cl. 172—15 **15 Claims**



1. A power operated lawn edger comprising:

an elongated support;

a power unit including a prime mover mounted on one end of said support;

a cutter head including drive mechanism disposed at the opposite end of said support and drivably connected to rotary cutting blade means adapted for rotation in a substantially vertical cutting plane;

means drivingly interconnecting said power unit and said cutting blade means;

a first handle portion disposed on said power unit and extending along the top of said power unit generally longitudinally with respect to the longitudinal axis of said support;

an elongated tubular handlebar mounted on said support between said ends of said support and projecting generally horizontally from said support, said first handle portion and said handlebar being adapted to be grasped, respectively by an operator's hands for guiding said edger in the operation thereof; and

a single gauge roller mounted at said opposite end of said support and adapted to partially support said edger to control the cutting depth of said cutting blade means in edging turf along a substantially predetermined cutting path.

4,364,436

PLOUGHS

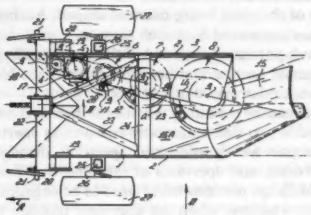
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

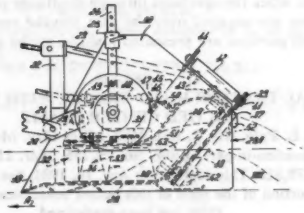
Filed Dec. 18, 1980, Ser. No. 217,674

Claims priority, application Netherlands, Dec. 21, 1979, 7909235

Int. Cl.³ A01B *9/00*

U.S. Cl. 172—33 **13 Claims**





1. A plow comprising a mobile frame and a plow member supported on said frame, said member including a channel shaped trough and a soil cutting means at the front thereof, at least one movable soil displacing guide within said trough positioned to engage and laterally move a furrow slice of earth cut by said cutting means during operation, said member also comprising guide means having an upwardly curved surface located adjacent said guide, to the rear of said cutting means, said guide including a row of displacing guide rollers that are rotatable about upwardly extending axes and said row extending in the general direction of plow travel, said rollers progressively increasing in diameter from front to rear and driving means connected to rotate said guide rollers, said guide means being positioned to engage the furrow slice as the latter is moved from front to the rear of said rollers and invert the slice whereby the inverted slice is deposited to the rear in the furrow being formed.

4,364,437

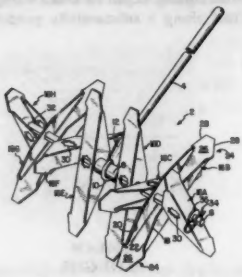
CULTIVATING TOOL

Ray Haapala, Rte. 3, Box 76, Dassel, Minn. 55325

Filed Dec. 31, 1981, Ser. No. 336,414

Int. Cl.³ A01B 1/10

U.S. Cl. 172—349 **5 Claims**



1. A cultivating tool comprising,

an elongate handle,

an elongate axle on the handle with its longitudinal axis transverse to the length of the handle,

a series of sheet metal tines,

each of the tines being channel-shaped, having flange portions connected by a web portion,

the web portion at each end of the tine extending beyond the channel portion and having a flat surface lengthwise between relatively thin side edges,

and means for mounting the tines at their mid portions on the axle in two different modes comprising apertures through the tine web portion and apertures through the flange portions, said apertures of said tine web portions and of said flange portions being sized to be engageable over said axle whereby, when the apertures through the web portion of one of the tines are engaged over the axle and the tool propelled along the ground, the thin edges of the tine web portion ends are presented knife-like to the ground, and when the apertures through the flange portions of the tines are engaged over the axle, the flat ends of the tine web portions are presented hoe-like to the ground.

4,364,438

DUAL TRACTOR ROAD GRADER WITH DOUBLE ARCHED CENTER FRAME

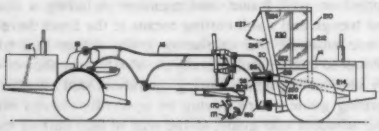
Donald L. Pyle, Rte. 2, Box 3180, Miles City, Mont. 59301

Continuation-in-part of Ser. No. 25,155, Mar. 21, 1979, Pat. No. 4,279,312. This application Apr. 16, 1981, Ser. No. 254,716

The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.

Int. Cl.³ E02F 3/76

U.S. Cl. 172—789 **1 Claim**



1. An earth working apparatus comprising:

a single axle engine means,

a single axle tractor means,

a double arched center frame articulated at one end thereof to said engine means and at the other end thereof to said tractor means,

a draw bar and yoke assembly including a subframe mounted to said center frame, said subframe supporting a rotatable subframe ring for rotation about an axis intersecting the plane of said draw bar and yoke assembly,

a mold board assembly including a mold board and blade carried by said rotatable ring and means for adjusting the angle of attack of said blade, the angle of inclination of the longitudinal axis of said mold board, the vertical lift position of the mold board and blade, and lateral position of the mold board and blade, and lateral position of the rotatable subframe ring relative to the arched center frame,

the improvement wherein:

said double arched center frame comprising a first arcuate underportion, a second arcuate underportion spaced longitudinally from said first arcuate underportion, said first arcuate underportion including a first depending leg and a second depending leg, said second arcuate underportion including a third depending leg and a fourth depending leg, said second depending leg and said third depending leg defining therebetween a depending center common leg of said double arched center frame,

a ball and socket mount connecting the leading end of said draw bar and the yoke assembly to said depending center common leg of said double arched center frame.

a pair of longitudinally spaced yoke plates affixed to said center frame intermediate of said center common leg and said other end of said arched center frame,

bell cranks pivotably mounted to said spaced yoke plates on respective lateral sides of said center frame and each including a first arm doubly pivotably coupled to one end of a corresponding hydraulic lift cylinder for pivotal movement about intersecting horizontal axes, each lift cylinder disposed on a respective side of said center frame and a second arm at an angle to said first arm and pivotably coupled to a link member common to said bell cranks,

means for pivotably connecting the other end of said lift cylinders to said rotatable subframe ring on opposite sides of said center frame,

means for pivotably connecting one end of a side shift hydraulic cylinder to said subframe at one side of said center frame and at the other end to said link member intermediate of its pivot connections to the second arms of said bell crank members, such that extension and retraction action of said hydraulic lift cylinders causes said subframe, said rotatable ring and said mold board assembly to be vertically raised or lowered, extending or retracting one of said hydraulic lift cylinders with respect to the other, causes said mold board assembly to be tilted in the plane of the longitudinal axis of the mold board and extension or retraction action of said side shift hydraulic cylinder causes said subframe and said mold board assembly to be shifted laterally with respect to the longitudinal center line of said center frame,

a first pair of hydraulic crab steering cylinders are respectively pivotably connected to the single axle engine means and to the arched end of said center frame,

a second pair of hydraulic crab steering cylinders are respectively pivotably connected at respective ends to said center frame arched end adjacent the inner end thereof and to the tractor means toward the center thereof such that extension and retraction action of said hydraulic crab steering cylinders effects angular orientation of said engine and said tractor means with respect to said center frame at respective ends thereof to cause said engine means and said tractor means to move into laterally offset position with respect to each other and into crab steering position, and

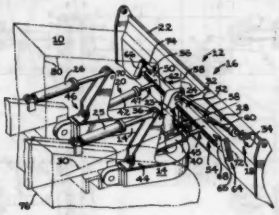
a cab supported on inclined beams on said tractor means whereby an operator may control the operation of the apparatus and view the mold board and blade when they are angled backward in the extreme position.

4,364,439

IMPLEMENT ASSEMBLY WITH PIVOT CONNECTION

Jerrold R. Asal, Channahon, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00551, § 371 Date Apr. 27, 1981, § 102(e) Date Apr. 27, 1981, PCT Pub. No. WO82/03882, PCT Pub. Date Nov. 11, 1982
PCT Filed Apr. 27, 1982, Ser. No. 280,382
Int. Cl.³ E02F 3/76
U.S. Cl. 172—821 10 Claims



1. In an implement assembly (12) having a frame (14) having a longitudinal axis (30), an implement (16), a pivot connection (23) defining a substantially vertical axis (24), a subframe (50) pivotally connected to said frame (14) and positioned adjacent and in contactable relationship with said implement, first means (18) for controllably pivotally moving said implement (16) about the longitudinal axis (30) relative to said frame (14) and second means (20) for controllably pivotally moving said implement (16) about said substantially vertical axis (24), said implement (16) being directly pivotally connected to said frame (14) by said pivot connection (23), the improvement comprising:

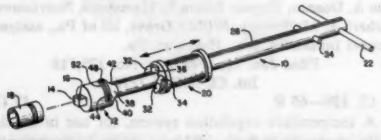
said pivotal connection (23) having first, second, and third pivot axis (127,129,131) intersecting at a common point (133), said pivotal connection (23) including a bracket (81) having upper and lower flanges (93,97), a pivot block (83) having a bore (91) and being secured between said flanges (93,97), a pin (38) having a first flange (107) having a bore (111) and a second flange (109) having a bore (113), said bores (91,111,113) forming an aligned passageway, and a pivot shaft (85) fitted within said passageway and securing said pin (38) to said block (83).

4,364,440

HAND HELD ROTARY IMPACT TOOL

Milton Clar, 9408 Linden Ave., Bethesda, Md. 20014

Filed May 8, 1980, Ser. No. 148,051
Int. Cl.³ B25D 15/00
U.S. Cl. 173—93.7 14 Claims



1. A rotary impact tool comprising a shaft, an anvil member on said shaft for providing rotary motion to a tool body, a striker nonrotatably and axially slidably mounted on said shaft for applying impact forces to said anvil member by axial movement of said striker on said shaft, complementary inclined striking surfaces on said anvil member and said striker, respectively, and means permitting selective rotational movement of said anvil member relative to said shaft to and from a terminal position in which the respective striking surfaces of said anvil member and said striker are mutually orientated so that an axial impact of said striker against said anvil member applies a rotational force to said anvil member.

4,364,441

HOLE CLEANING DEVICE FOR AUGERS

Marvin D. Geeting, Fort Wayne, Ind., assignor to States Engineering Corporation, Fort Wayne, Ind.

Filed Nov. 12, 1980, Ser. No. 206,070
Int. Cl.³ C21B 10/44
U.S. Cl. 175—84 7 Claims

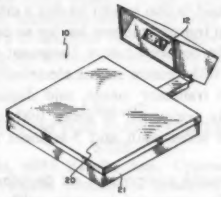
1. A cleaning device for a hole-digging auger comprising a supporting carrier adapted to be mounted for rotation about a given axis, a generally planar blade secured to and radially extending from said carrier for rotation therewith, said blade generally lying in a first plane inclined to said axis and having a leading edge which extends radially outwardly from said axis, and an upstanding deflecting surface on said blade which extends radially outwardly from said carrier and is angularly spaced from said leading edge, whereby rotation of said carrier causes said blade to elevate loose soil from a plane including said leading edge and said deflecting surface to deflect the elevated soil radially outwardly, said blade being a segment of a screw flight and said deflecting surface being carried by an elongated metal strip secured along one edge to said blade, said elongated metal strip being arcuately shaped with the convex surface thereof being toward said leading edge.

4,364,442

DIGITAL SCALE

Jon M. Flickinger, Salina, Kans., assignor to L. & D. Sales Corporation, Salina, Kans.

Filed Feb. 20, 1981, Ser. No. 236,262
Int. Cl.³ G01G 3/142
U.S. Cl. 177—177 6 Claims



1. A digital scale having a digital screen for displaying digits comprising,

a. a power supply means;

b. a bridge supply means;

c. a control logic means, said bridge supply means and control logic means being electrically engaged by said power supply means;

d. strain gauge bridge means including at least two strain gauges and electrically engaged by said bridge supply means in two places;

e. an amplifier means electrically engaging said strain gauge bridge means in two places;

f. an A-D converter means electrically connected to said amplifier means and to said control logic means;

g. a logic means electrically attached to said A-D converter means and to said control logic means; and

h. a display driver means electrically connected to said logic means to said control logic means, and to said digital screen for displaying digits thereon;

i. a base; a support means attached to said base; at least one beam attached to said support means, said beam having one of said two strain gauges attached on the top thereof and the other strain gauge connected on the bottom thereof; at least one U-shaped mounting member mounted on each beam; and a weigh plate means resting upon said U-shaped mounting member;

said bridge supply means includes a bridge supply circuitry including a first conductor, a first operational amplifier means connected to said first conductor, a first transistor means electrically connected to said first operational amplifier means, a second conductor electrically connected to said operational amplifier means, and to the collector electrode of said transistor means, a third conductor connected to the emitter electrode of said first transistor means and to a second operational amplifier means; said third conductor having a first resistor means; a first capacitor means and a second circuit common connection means, in series and in order stated, electrically connecting from said first conductor; a second resistor means, a third resistor means, and a first circuit common connection means, in series and in order stated, electrically connecting from said third conductor between said first transistor means and said first resistor means, said third resistor being variable and electrically connecting to said first operational amplifier means; a third circuit common connection means electrically connected to said second operational amplifier means, a fourth conductor connecting from said third conductor, at a point between said second operational amplifier means and said first resistor means, to said second operational means, said fourth conductor including a fourth resistor means, and a second transistor means, in series and in order stated, from said third conductor; and a fifth conductor connecting from said second transistor means to said second operational amplifier means;

said driver display means includes each of said display digits of said digital screen having a circuitry comprising a third transistor means having an emitter electrode electrically connected to a 7-segment decoder/driver means, a fifth resistor means electrically connected to said third transistor means, said display digits being electrically connected in series with each other and further in series with said 7-segment decoder/driver means;

said logic means comprises a six decade counter means electrically connected in series with said 7-segment decoder/driver means, said fifth resistor means being electrically connected in series to said decade counter means;

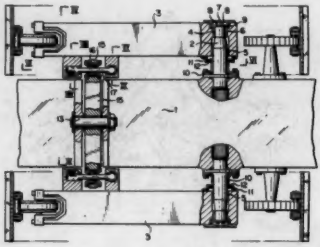
said control logic means comprises at least one monostable multivibrator means directly electrically connected to said six decade counter means, a first flip-flop means directly electrically attached to said 7-segment decoder/driver means, a second flip-flop means directly electrically engaging said flip-flop means, and at least one R-S flip-flop nor gate means electrically engaging said at least one monostable multivibrator means.

4,364,443

SUSPENSION APPARATUS FOR TRACK-TYPE VEHICLES

Yoshito Sato, Hirakata, and Minoru Matsumoto, Katano, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 216,785
Claims priority, application Japan, Dec. 18, 1979, 54-163501
Int. Cl.³ B62D *55/00*
U.S. Cl. 180—9.5 **7 Claims**



1. A suspension apparatus for a track-type vehicle comprising a main frame, pivot shaft means fixedly secured to and transversely outwardly extending from said main frame, a pair of laterally spaced track frame means pivotally connected through said pivot shaft means to either side of said main frame, respectively, an equalizer bar pivotally connected to said main frame and extending transversely between said pair of track frame means, characterized in that said apparatus is provided between said track frame means and said equalizer bar with a pair of stress-relieved mounting means, each comprising forward and rearward mountings fixedly secured to the inner vertical surface of said track frame means; a shaft having at the rearward end thereof a spherical part pivotally accommodated through a spherical bush within said rearward mounting and having at the forward end thereof a block part loosely housed within said forward mounting; a resilient pad member interposed between said block part of the shaft and the inside of said forward mounting; and spherical bushing means pivotally connected to each end of said equalizer bar and slidably mounted on a substantially intermediate portion of said shaft.

4,364,444

TEMPERATURE REGULATION SYSTEM FOR ELECTRIC VEHICLES

Guido A. Donato, Wayne; Edwin E. Hammond, Norristown, and Robert A. Mullowney, Willow Grove, all of Pa., assignors to Drexel Industries, Inc., Horsham, Pa.

Filed Jan. 16, 1981, Ser. No. 225,715
Int. Cl.³ B60H *1/16*
U.S. Cl. 180—65 R **17 Claims**

1. A temperature regulation system, for use in an electric vehicle, operable in both cold and warm environments, the vehicle having at least one electric motor and at least one control component, comprising

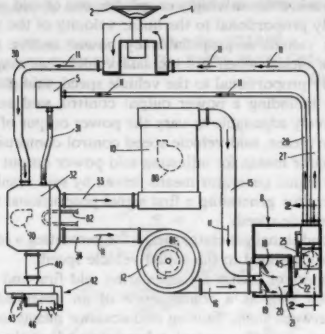
first duct means for directing air from the motor to the control component,

second duct means for returning air from the control component to the motor,

means for forcing air through the first and second duct means,

temperature sensing means disposed within the control component, and

valve means, operatively connected to and actuated in response to signals from, the temperature sensing means, the



valve means comprising means for exposing the control component to outside air.

4,364,445

TRANSMISSION DEVICE FOR A VEHICLE

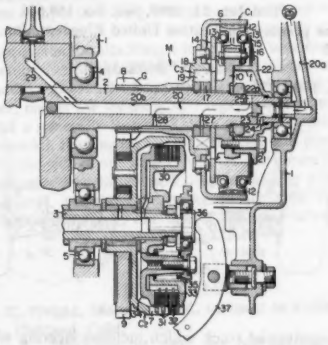
Yoshitoku Iizuka, Urawa, and Kiyokazu Ohkubo, Wako, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1980, Ser. No. 178,941

Claims priority, application Japan, Aug. 29, 1979, 54-118655[U]

Int. Cl.³ B60K *41/000*; F16D *47/002*; F16H *45/000*

U.S. Cl. 180—70 R **8 Claims**



1. A transmission device in a vehicle comprising: a casing; a centrifugal clutch in said casing and mounted on a crank shaft of the engine; a multiple plate type speed change clutch in said casing and mounted on a speed change input shaft; said centrifugal clutch having an output member; said speed change clutch having an input member; said output member being operatively connected to said input member through a reduction gear train; said speed change clutch being interposed between said centrifugal clutch and said reduction gear train; said centrifugal clutch being partly immersed into lubricating oil within said casing, said speed change clutch being totally positioned above the surface of said lubricating oil.

4,364,446

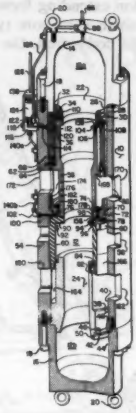
GENERATING PULSES

David L. Thomas, Columbus; William S. Pope, Reynoldsburg, both of Ohio, and William B. Huckabay, Dallas, Tex., assignors to Battelle Memorial Institute, Columbus, Ohio

Filed May 23, 1980, Ser. No. 152,859

Int. Cl.³ G01V *1/137, 1/38*

U.S. Cl. 181—120 **12 Claims**



1. The method of generating an acoustic pulse in a water or land medium utilizing a sleeve valve member that is axially movable between a base position closing the passage and a displaced position clearing the passage comprising the steps of

confining compressed gas at high pressure in a valve chamber within the medium by holding the sleeve member in the base position,

generating an initiating signal,

responding to the signal by sleeve valve member towards the displaced position to open the passage for the compressed gas from the chamber into the medium so as to initiate the rise of a pressure pulse therein,

generating externally of the valve chamber a second signal during the initial rise of the pressure pulse,

responding to the second signal by closing the passage in a manner such that the initial rise of the pressure pulse is limited by the closure of the passage arresting the motion of the sleeve valve member at the displaced postion by substantially instantaneously transferring most of its momentum to a momentum exchange sleeve, and gradually decelerating the momentum exchange sleeve.

4,364,447

STEERING SYSTEM FOR SNOWMOBILE STEERABLE SKIS

Keisuke Yoshida, 6555 Katella Ave., Cypress, Calif. 90630, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 75,138, Sep. 12, 1979, abandoned. This application Sep. 11, 1981, Ser. No. 301,215

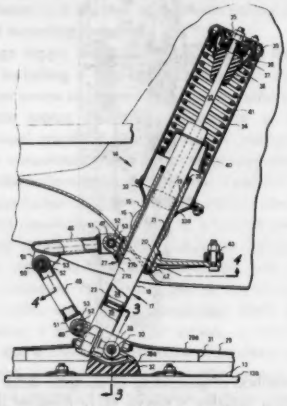
Claims priority, application Japan, Sep. 29, 1978, 53-120620; Nov. 30, 1978, 53-148508

Int. Cl.³ B62B *17/04*; B62M *27/02*

U.S. Cl. 180—182 **5 Claims**

1. A steering system for the steering of a vehicle to be operated on a snowy surface, said vehicle having a body shell, said system comprising: a fixed tube mountable to the chassis of such a vehicle and having a central steering axis which extends downwardly from and forwardly relative to the vehicle so as to form an angle with level ground which is other than a right angle; a movable plunger having an axis, said plunger being

coaxially mounted to said fixed tube for axial and rotational movement relative thereto; bias means biasing the plunger toward its lower end; a ski pivotally connected to said lower end for tiltable rotation only around a single tilt axis perpendicular to said steering axis so the ski and the plunger turn together around said steering axis; a steering arm rotatably mounted to the outer circumference of said fixed tube for rotation around said steering axis; a first steering arm portion extending rearwardly into the inside of said body shell; a second steering arm portion extending forwardly and projecting outside of said body shell; a scissors type two link linkage disposed outside of said body shell, the links of said linkage



rotating relative to each other, only in a single plane which includes the steering axis, a pivot pin pivotally joining said links to one another at one of their ends, another pivot pin pivotally joining one of said links at its other end to said second steering arm portion outside of said body shell, and yet another pivot pin pivotally joining the other link to structure which causes said ski and said plunger to rotate around said steering axis, all of said pivot pins being parallel to one another, whereby turning said steering arm will turn said structure and said plunger; and steering means including a tie rod inside said body shell connected to said first steering arm portion to turn the same.

4,364,448

SPEED CONTROL FOR WHEELED VEHICLES

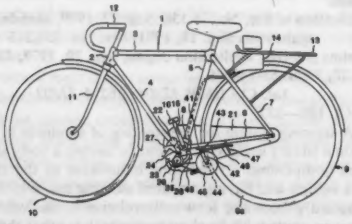
Katsumi Ikuma, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 57,347, Jul. 13, 1979, abandoned. This application Jun. 4, 1981, Ser. No. 270,652

Claims priority, application Japan, Jul. 20, 1978, 53-89225; Oct. 23, 1978, 53-130719

Int. Cl.³ B62M 7/00

U.S. Cl. 180—206 **36 Claims**



1. A vehicle speed control for a wheeled vehicle of the type that has a brake, and drive means which includes a pedal-driven crank drive system including a crank which is drivingly couplable to a wheel of said vehicle, the rotational velocity of said crank when drivingly coupled to one of said wheels being directly proportional to the linear velocity of the vehicle, and which vehicle is propellable by power motive means, said motive means when driving said vehicle has a speed that is directly proportional to the vehicle speed, said power motive means including a power output control, said control being selectively adjustable to vary the power output of said power motive means, said vehicle speed control comprising:

actuator means for adjusting said power output control;

first signal generator means driven by said crank drive system for generating a first signal proportional to a desired vehicle speed;

second signal generator means for generating a second signal proportional to the actual vehicle speed;

comparator means for comparing said first and second signals and, as a consequence of an observed difference between them, causing said acutator means to adjust said power output control, whereby to adjust the power output of said power motive means to a level which tends to eliminate said difference in speeds and causes the vehicle to approach said desired vehicle speed;

brake operation detecting means for generating a signal as a consequence of actuating said brake; and

storage means in said comparator means for containing the actual linear velocity of the vehicle, said comparator means, upon the cessation of a first signal from said first signal generator means and in the absence of a signal from said brake operation detecting means, controlling said actuator to maintain said actual velocity at the value it had at the time when said first signal generator means ceased supplying said first signal.

4,364,449

INDUSTRIAL TRUCK

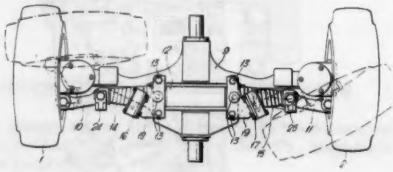
William Knight, Coventry, and David G. Marriott, Nuneaton, both of England, assignors to Coventry Climax Limited, England

Filed Jun. 11, 1980, Ser. No. 158,601

Claims priority, application United Kingdom, Jun. 29, 1979, 7922780

Int. Cl.³ B60K 31/00

U.S. Cl. 180—271 **9 Claims**

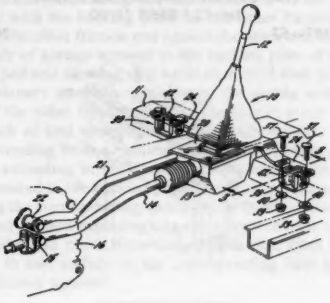


1. An industrial truck which includes steering wheels and driving wheels, an electric traction motor operative to drive both said driving wheels, at least one traction motor control switch, said at least one switch reducing the electrical energy fed to the traction motor when the switch is actuated, the switch being actuable when the angle turned through, from the straight ahead position by the inner one of said steering wheels reaches a value which is a predetermined angle, whereby the maximum speed attainable by said driving wheels is reduced when said at least one switch is actuated, wherein current to the electric traction motor is supplied in pulses, the ratio of pulse duration to pulse separation being variable by means of an accelerator to vary the speed of the driving wheels, and wherein actuation of said at least one switch reduces the maximum ratio attainable of pulse duration to pulse separation.

4,364,450
APPARATUS FOR MOUNTING A TRANSMISSION SELECTOR

James M. Kemp, Beloit, Wis., and Robert N. Phillips, Rockford, Ill., assignors to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Jan. 6, 1981, Ser. No. 222,898
Int. Cl.³ B60K *20/04*; F16F *1/36*; F16M *13/00*; G05G *7/16*
U.S. Cl. 180—336 10 Claims



1. Apparatus for mounting a transmission selector on the floor of a vehicle, said selector having first and second mounting arms extending transversely in opposite directions and adapted to underlie the floor, and first and second upright tongues projecting lingitudinally from said first and second arms, respectively, said apparatus comprising first and second brackets associated with said first and second tongues, respectively, and each having transversely spaced inner and outer upright legs disposed in straddling ralation with the respective tongue, means for attaching each bracket to the underside of the floor, and a generally S-shaped strap for securing each tongue to its respective bracket, said strap being made of elastomeric material and having one end portion lying alongside and secured to said inner leg, having an intermediate portion lying alongside and secured to said tongue and having an opposite end portion lying alongside and secured to said outer leg.

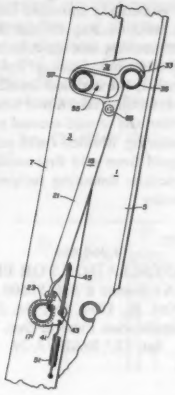
6. Apparatus for attaching a tongue-like member to a plate-like member, said apparatus comprising a pair of legs adapted to straddle and extend substantially parallel to said tongue-like member, means for securing said legs to said plate-like member, and a generally S-shaped strap made of resiliently yieldable material, first means for securing one end portion of said strap to one side of one of said legs, second means for securing an intermediate portion of said strap to one side of said tongue-like member, and third means for securing the opposite end portion of said strap to one side of the other of said legs.

4,364,451
LADDER LOCK

Allen C. Wright, Moraga, Calif., assignor to Utility Products, Inc., Oakland, Calif.

Filed Dec. 16, 1977, Ser. No. 861,220
Int. Cl.³ E06C *7/06*, *1/08*
U.S. Cl. 182—213 5 Claims

1. An extension ladder assembly comprising a base ladder section having side rails, a fly ladder section having side rails slidably mounted on said base ladder section, locking means comprising a shank having a head section and a foot section, said foot section rotatably secured to said fly ladder with said head section including a slotted opening of sufficient size to freely permit passage therethrough of a proximate rung of said fly ladder section for limiting rotation and maintaining said locking means in proximate functional position and with a hook for releasably engaging said base ladder section, secondary means responding to normal ladder use for positively securing said locking means in said engaged position against disengagement from said base ladder section, means directly removing said locking means from locking engagement with said base ladder section to a position spaced from said base ladder section and simultaneously initiating movement of said fly ladder section with respect to said base ladder section while retaining said locking means in said position spaced from said

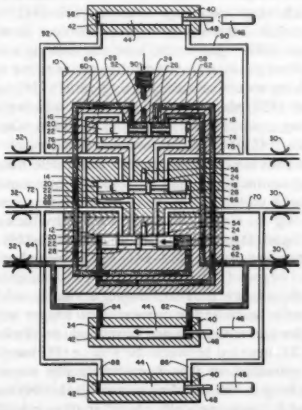


base ladder section, whereby, during movement of said fly ladder section relative to said base ladder section, said locking means will not bounce and bang or otherwise contact against said base ladder section, and when in normal use, application of force on said ily ladder section in a direction of such normal use, strengthens locking engagement between said ladder sections.

4,364,452
PULSE LIQUID FEEDER SYSTEM OF THE TYPE USED IN LUBRICATIONS SYSTEMS AND THE LIKE HAVING BROKEN LINE AND FLOW RATE DETECTION

Terril M. Crago, Seal Beach, Calif., assignor to Standun, Inc., Compton, Calif.

Filed Oct. 14, 1980, Ser. No. 196,651
Int. Cl.³ F01M *1/06*
U.S. Cl. 184—7 E 37 Claims



19. In a method of pulse feeding a liquid, the steps of: alternately feeding liquid to opposite first and second feeder cham-

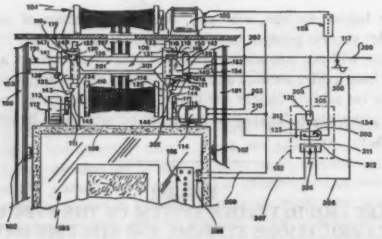
bers separated by a reciprocal feeder divider alternately movable into each while moving from the other; by said feeder divider movement, alternately feeding liquid from said second feeder chamber during said feeding into said first feeder chamber and from said first feeder chamber during said feeding into said second feeder chamber; during said liquid feeding from said second feeder chamber, feeding said liquid simultaneously to a first flow restriction and to a first monitoring chamber separated from a second monitoring chamber by a reciprocal monitoring divider alternately movable into each while moving from the other, said feeding of said liquid into said first monitoring chamber moving said monitoring divider into said second monitoring chamber feeding liquid therefrom to a second flow restriction; during said liquid feeding from said first feeder chamber, feeding said liquid simultaneously to said second flow restriction and to said second monitoring chamber to move said monitoring divider onto said first monitoring chamber to feed liquid from said first monitoring chamber to said first flow restriction; detecting reciprocal movements of said monitoring divider.

4,364,453

SAFETY INSTALLATION FOR ELEVATORS

Antoine Serina, 47 Av-Jeanne d'Arc, 95600 Eaubonne, France

Filed Nov. 26, 1980, Ser. No. 210,793
Claims priority, application France, Dec. 7, 1979, 79 30068
Int. Cl.³ B66B *13/24*
U.S. Cl. 187—29 R **16 Claims**



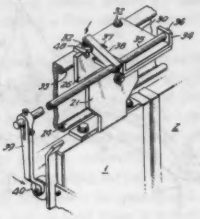
1. Elevator safety installation of the type comprising a moving contact (108) fastened to the lower ends of carrying cables (107) wound on an electric winch (105) and a car (103) mobile along stationary guides (100–101) located under the moving contact (108) and connected to it, on the one hand, by means of direct mechanical coupling organs (141–144) which are mounted mobile between an active position in which they make the car (103) rigidly solid with the moving contact (108) and a retracted position in which they are inactive and, on the other hand, by means of a connecting cable (116) wound on a rotary drum (110) placed on the car (103), which is suspended from moving contact (108) by said cable (116) when the coupling organs (141–144) are in retracted position, characterized in that it is provided with means for automatic decoupling of the moving contact (108) and car (103), means comprising an electric circuit which is connected to the same source (117) as that supplying the circuit of winch (105) and which comprises, on the one hand, at least an electromagnet (118–119) associated with the coupling organs (141–144) and mounted so that it has to keep said organs (141–144) in active position as long as it is excited by the electric current flowing normally, while it has to release them as soon as the current is no longer supplied and therefore the current no longer flows and, on the other hand, a switch (121) inserted between the source (117) and the winch (105) and mounted so that it automatically stops in closed position as long as the coupling organs (141–144) are in active position and it is automatically placed in open position as soon as said organs (141–144) are in retracted position, these coupling organs (141–144) being associated with mechanical means (149–150) opposing the electromagnet (118–119) but with less force and which constantly pull these organs (141–144) toward their retracted position.

4,364,454

VEHICLE DOOR LOCK FOR LIMITING DOOR OPENING TO SPECIFIED VEHICLE POSITIONS

Walter Glaser, Montvale, and Herbert P. Glaser, Demarest, both of N.J., assignors to G.A.L. Manufacturing Corporation, Bronx, N.Y.

Filed Oct. 27, 1980, Ser. No. 201,307
Int. Cl.³ B66B *13/00*
U.S. Cl. 187—57 **26 Claims**



1. In a passenger transportation system in which a passenger carrying vehicle moves along a selected path and stops at predetermined points to permit passengers to exit from said vehicle, said vehicle having a door thereon which travels therewith and which opens to permit the exiting of passengers from the vehicle, the combination therewith of:

latching means carried by said vehicle and acting between the door and another portion of the vehicle for permitting opening of said door by a predetermined amount less than the amount required for a passenger to exit from the vehicle and for preventing opening of said door by more than said predetermined amount; and

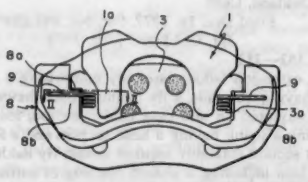
control means which is responsive to the position of said vehicle, which is connected to said latching means and which disables said latching means when said vehicle is within a predetermined distance from a said point and thereby permits said vehicle door to open more than said predetermined amount when said vehicle is within a predetermined distance from a said point, said distance being small relative to the distances between said points.

4,364,455

RETRACTION SPRING FOR DISC BRAKE PADS

Harumi Oshima, Kawasaki, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Continuation of Ser. No. 158,386, Jun. 11, 1980, abandoned. This application Jan. 26, 1982, Ser. No. 342,919
Claims priority, application Japan, Jun. 20, 1979, 54-84689; Jun. 20, 1979, 54-84691
Int. Cl.³ F16D *55/224*
U.S. Cl. 188—1.11 **2 Claims**



1. A disc brake comprising: a pair of friction pads on opposite sides of a rotatable disc and each having a backing plate and a pad of friction material on said backing plate and facing

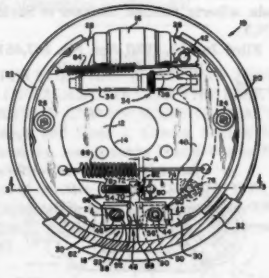
the disc; a stationary member supporting the backing plates thereon for displacement toward and away from the disc, said stationary member being adapted to be secured to a nonrotatable part of a vehicle on one side of the disc and having limb portions straddling the disc and extending the other side of the disc, said limb portions respectively having surfaces facing away from the rotatable disc and generally parallel with the surface of the disc; a caliper floatingly mounted on the stationary member and incorporating therein means for pressing one backing plate toward the disc for pressing the friction pad thereon directly against one side of the disc, said caliper having a limb portion straddling the circumference of the disc and engaged with the backing plate for the other friction pad for pressing the other friction pad against the other side of the disc; and a pair of springs secured to the backing plate of the other friction pad and abutting said surfaces on said limb portions of said stationary member, respectively, for urging said backing plate of the other friction pad and the caliper away from the disc, each of said springs having generally straight end portions extending from a resilient central loop portion, one end portion extending in the direction of the axis of the disc and being secured to the backing plate of said other friction pad for securing the corresponding spring to the backing plate, and the other end portion extending angularly with respect to the axis of the disc and circumferentially of the disc from said loop portion to said surface on the corresponding limb portion of the stationary member.

4,364,456

DRUM BRAKE HAVING DUO MODE

James J. Colpaert, Granger, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 13, 1981, Ser. No. 253,983
Int. Cl.³ F16D *51/48, 65/22*
U.S. Cl. 188—106 A **7 Claims**



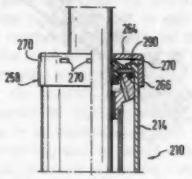
1. A drum brake assembly of the type comprising a pair of arcuate brake shoes movably carried upon a backing plate, said pair of brake shoes defining pairs of confronting brake shoe ends, a hydraulic actuator received between one pair of said confronting brake shoe ends to move said brake shoes into engagement with a rotatable brake drum to effect a service brake application, a strut extending between said brake shoes adjacent said hydraulic actuator, and a parking arm pivotally engaging one of said brake shoes and said strut to move said pair of brake shoes into engagement with said brake drum to effect a parking brake application in response to pivotal movement of said parking arm, a support assembly secured to said backing plate between the other pair of confronting brake shoe ends to transfer braking torque from said brake shoes to said backing plate, said support assembly including a lever cam received between said other pair of confronting brake shoe ends to move said other pair of confronting brake shoes ends apart in response to pivotal movement of said lever cam, and interconnecting means for pivoting said lever cam to move said other pair of brake shoe ends apart in response to pivotal movement of said parking arm effecting a parking brake application, the improvement wherein said interconnecting means includes said parking arm cooperating with said lever cam to define a lost motion connection therebetween to enable said parking arm to effect a substantially full parking brake application prior to said lever cam being pivoted by movement of said parking arm.

4,364,457

PISTON-CYLINDER UNIT PARTICULARLY FOR SHOCK ABSORBER OR COMPRESSION STRUT

Felix Wössner, Schweinfurt, and Günther Handke, Euerbach, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs A.G., Schweinfurt, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 96,014
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1978, 7834927[U]
Int. Cl.³ F16F *9/36*
U.S. Cl. 188—322.17 **11 Claims**



1. A piston-cylinder unit, particularly adapted for use as a shock absorber or compression strut comprising:

a cylinder assembly having an axis, two axial ends and an outer circumferential surface;

at least one hollow space defined within said cylinder assembly;

a guide and seal assembly on one end of said cylinder assembly;

a piston assembly which is axially moveable between an inner and an outer end position relative to said cylinder assembly, said piston assembly including a piston rod having an inner portion projecting into said hollow space through said guide and seal assembly and an outer portion arranged outside of said cylinder assembly;

a cap assembly including a cap comprising an annular bottom which is essentially normal to said axis and a jacket, with said piston rod extending through said annular bottom and with said annular bottom being located adjacent that side of said guide and seal assembly which is remote from said hollow space, said jacket bearing against said outer circumferential surface of said cylinder assembly;

a tubular body arranged on said outer portion of said piston rod, said tubular body being elastically compressible in the axial direction and being fastened in the axial direction on a fastening point of said piston rod with a part which faces away from said cap assembly, said tubular body together with said piston rod defining in the axial section between said fastening point and its end facing toward said guide and seal assembly an annular chamber which is open toward said cap assembly;

closing means on said cap assembly for closing the annular chamber when said piston rod approaches said inner end position; and

passage means on said cap assembly connecting said annular chamber to the atmosphere when an end of said tubular body facing toward said cap assembly bears against said closing means;

said cylinder assembly including a tube forming the outer circumferential surface of said cylinder assembly and bent radially inwardly at its end facing toward said cap assembly in partial regions of its circumference, with axial projections of said cylinder being formed on said tube be-

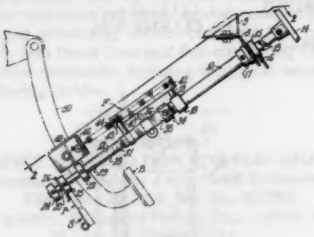
tween said bent circumferential regions, said axial projections supporting said annular bottom of said cap assembly in the axial direction, said guide and seal assembly comprising a sealing member, said sealing member being axially coextensive with at least part of the axial length of said axial projections.

4,364,458

BRAKE RELEASE AUTOMOTIVE FUEL CONTROL ASSEMBLY

John J. Frueh, 806 W. 167th St., Gardena, Calif. 90247

Filed Oct. 19, 1981, Ser. No. 312,833
Int. Cl.³ B60K *41/20*
U.S. Cl. 192—3 T **5 Claims**



1. A fuel control assembly comprising in combination:

an elongated guide channel having a proximate end and a distant end, and means for mounting said channel in the operator's compartment of a motor vehicle between a distant fuel control element and a proximate hand-reach position for a vehicle operator,

an operating shaft movable lengthwise along said guide channel, having proximate and distant lengths extending beyond the respective ends of the guide channel, said shaft being at least partially rotatable axially along the channel and bearing a longitudinal series of engagement means located laterally-adjacent a smooth length of said shaft,

unidirectional latch means carried by the guide channel and positionable by such rotation of the shaft to engage a selected unit of said engagement means and thereby restrain lengthwise movement of the shaft toward its proximate end only, and alternately by counterrotation of the shaft to slidingly overlie said smooth length of the shaft and thereby permit lengthwise shaft movement in either direction, unrestrained by the latch means,

means for coupling the distant length of said shaft with said fuel control element to maintain a set level of fuel flow responsive to the amount of distant extension of the shaft from the guide channel, and

means for releasably setting the distant end of said shaft at a selected amount of extension from said guide channel, thereby holding the coupled fuel supply element in position to effect corresponding fuel flow.

4,364,459

ELECTROMECHANICAL COUPLING SYSTEM FOR PREVENTING A MECHANICAL DEVICE FROM OPERATING BEYOND PRESELECTED OPERATING PARAMETERS OR CONTROL PARAMETERS

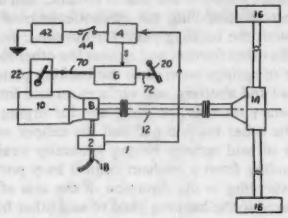
Rashid Futehally, Bombay, India, assignor to Dynacraft Machine Company Limited, Bombay, India

Filed Feb. 11, 1980, Ser. No. 120,614
Int. Cl.³ B60K *41/02*; F16D *43/284*
U.S. Cl. 192—0.033 **13 Claims**

1. An electromechanical coupling system for operating a mechanical device within a preselected operating parameter or control parameter, comprising:

sensor means operatively adapted to be connected to said mechanical device for sensing changes in a control parameter or an operating parameter thereof and generating control pulses proportional to the parameter sensed;

an electronic control unit comprising a control pulse monitor unit having its input connected to the output of the sensor means and a bistable logic unit connected to the output of the monitor unit for producing enabling pulses or signals corresponding to the control pulses received thereat when the mechanical device operates within said



preselected operating parameter or control parameter and for suppressing said enabling pulses when the mechanical device operates at or beyond said operating parameter or control parameter; and,

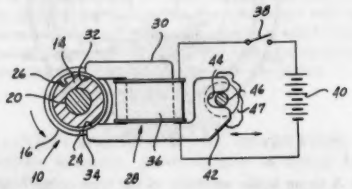
coupler means operatively connected between a drive unit and a driven unit of said mechanical device and responsive to said enabling pulses so as to coupled or uncouple said drive unit from said driven unit depending upon whether the enabling pulses are present or suppressed.

4,364,460

ELECTROMAGNETIC HELICAL SPRING CLUTCH

Benzion Landa, Alberta, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Filed Jul. 11, 1980, Ser. No. 167,461
Int. Cl.³ F16D *27/10*
U.S. Cl. 192—35 **9 Claims**



1. A magnetically actuated clutch assembly including in combination a first clutch member, a second clutch member, said first and second clutch members being supported for rotary movement around a common axis, a helical spring, means for securing one end of said spring to said first clutch member for rotation therewith around said axis, a portion of said spring having a free end surrounding said second clutch member, the arrangement being such that said spring portion rotates relative to said second clutch member in the absence of a restraint against the movement of said free end, one of said spring and said second member being formed of magnetic material, an electromagnet comprising a pair of pole pieces of opposite polarity, means mounting said electromagnet for movement toward said second clutch member with said pole pieces adjacent said surrounding spring portion, a coil carried by said electromagnet, and means for energizing said coil to cause said pole pieces to move toward said second clutch member to exert a retarding force on said free end.

4,364,461

PARKING INDICATOR TOKEN STRIP

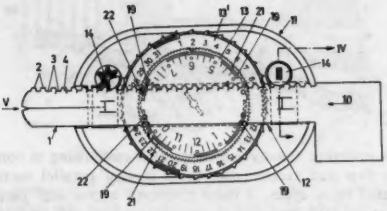
George Tauber, Kandlgasse 37, Vienna, Austria (A-1071)

Filed Oct. 1, 1980, Ser. No. 192,840

Claims priority, application Switzerland, Mar. 21, 1980, 2248/80

Int. Cl.³ G07F 7/02

U.S. Cl. 194—4 D 24 Claims



1. A value strip for use in a parking indicator of the type including a casing, means for indicating the time of commencement of parking and operably connected to and movable with respect to the casing, a channel through the casing for insertion therethrough of the value strip to prevent adjustment of the time indicating means, and locking means for retaining the value strip in the channel, said value strip comprising:

an elongated flat member having formed along one longitudinal edge tooth means for meshing engagement with the locking means of a parking indicator, said member having a weakening means for causing visible destruction of said member to occur when removal of said member from the channel in the parking indicator, in the direction of insertion into the channel or in a direction opposite to the direction of insertion is attempted.

4,364,462

APPARATUS FOR TRANSPORT AND TEMPORARY STORAGE OF CIGARETTES OR THE LIKE BETWEEN PRODUCING AND PROCESSING MACHINES

Gerhard Tolasch, and Hans J. Grasse, both of Wentorf, Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. K.G., Hamburg, Fed. Rep. of Germany

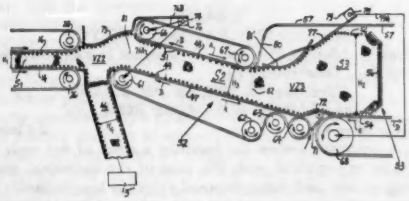
Continuation of Ser. No. 878,615, Feb. 16, 1978, abandoned.

This application Oct. 6, 1980, Ser. No. 194,600

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758863

Int. Cl.³ B65G 1/00

U.S. Cl. 198—347 7 Claims



1. Apparatus for transporting cigarettes or analogous rod-shaped articles which constitute or form part of smokers' products from at least one variable-capacity producing machine to at least one variable-capacity consuming machine, comprising means for transporting a multi-layer stream of articles from the producing machine along a first path having a discharge end; a conveying device including a channel having a receiving end at said discharge end and defining a second path for delivery of articles of said multi-layer stream to the consuming machine, the cross-sectional area of said channel being such that the articles therein form a multi-layer stream; at least one variable-volume surge bin having a first inlet-outlet opening for admission of articles into or for evacuation of articles from its interior, said surge bin comprising a reciprocable bottom wall and an end wall extending upwardly from and movable with said bottom wall toward and away from said first opening to thereby respectively reduce and increase the volume of said surge bin; means for monitoring the upper level of the article layer in the region of said first opening, said monitoring means being installed at a predetermined distance from said bottom wall; means for moving said end wall away from and toward said first opening when the monitored level respectively rises and falls; sensor means adjacent to said discharge end and movable between a plurality of positions each indicative of a different ratio of the rate of transport of articles along said first path to the rate of delivery of articles along said second path; an intermediate reservoir communicating with said first opening and having a second inlet-outlet opening adjacent to said first path, said reservoir including means for conveying articles from said surge bin to said first path for introduction into said receiving end when the requirements of the consuming machine exceed the output of the producing machine and for conveying articles from said first path into said surge bin when the output of the producing machine exceeds the requirements of the consuming machine, said second opening being in communication with said discharge end and with said receiving end to admit articles from said discharge end into said reservoir when the output of the producing machine exceeds the requirements of the consuming machine and to admit articles into said receiving end when the requirements of the consuming machine exceed the output of the producing machine; and drive means for operating said conveying means in dependency on the position of said sensor means so as to advance articles from said surge bin to said first path when said ratio decreases and to advance articles from said first path into said surge bin when said ratio increases.

4,364,463

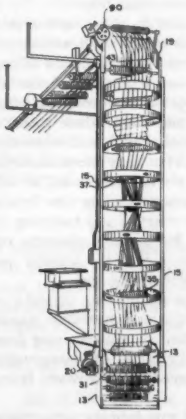
TURNOVER CONVEYOR

Arthur V. Faltus, 1643 LaSalle St., Belleville, Ill. 62221

Filed Nov. 12, 1980, Ser. No. 206,094

Int. Cl.³ B65G 47/24

U.S. Cl. 198—405 9 Claims



1. In a double wire belt conveyor for conveying newspapers along a line of travel the improvement comprising a series of wire belt-carrying rolls spaced along the line of travel, each rotatably mounted on an axis in a plane substantially perpendicular to the line of travel, successive of said rolls being

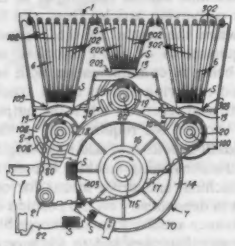
skewed angularly, in the same direction, from the previous roll, a multiplicity of endless wire belts in sets, the belts in each set extending around two, alternate, rolls in a reach that spans across one intermediate roll, and means for driving the rolls at one end of said series of rolls connected to drive a roll connected by said wire belts to alternate rolls of the series, and at the other end of the series of rolls, connected to drive the other alternate rolls of the series, whereby the skew of any set of wire belts does not exceed the sum of the skews of two successive rolls within the reach of said set of belts.

4,364,464

APPARATUS FOR THE FORMATION OF CIGARETTE GROUPS

Renato Manservisi, and Antonio Zullo, both of Bologna, Italy, assignors to Cir S.p.A. Divisione Sasib, Bologna, Italy

Filed Apr. 23, 1980, Ser. No. 142,997
Claims priority, application Italy, Apr. 27, 1979, 12563 A/79
Int. Cl.³ B65B *19/10*
U.S. Cl. 198—419 **3 Claims**



1. Apparatus for the formation of cigarette groups each consisting of at least two parallel superposed rows of cigarettes, said apparatus including a feed hopper; a plurality of passageways for each of said rows of cigarettes, said passageways receiving cigarettes from said feed hopper; a row-forming station, open at both ends, terminating each of said pluralities of passageways; and a rotatable receiving drum having a plurality of angularly equispaced groups of receiving pockets, wherein the improvement comprises:

an intermediate transfer drum for each of said row-forming stations positioned between an associated row-forming station and said receiving drum, each of said intermediate transfer drums having a plurality of angularly equispaced transfer pockets open at both ends and adapted to receive a cigarette row, said intermediate transfer drums being rotated in synchronism with said receiving drum so that each transfer pocket of each intermediate transfer drum is brought successively into alignment, at different angular positions, with a corresponding row-forming station and with a receiving pocket of said receiving drum;

first pusher means for pushing cigarette rows from said row-forming stations into the transfer pockets of said intermediate transfer drums; and

second pusher means for pushing cigarette rows from the transfer pockets of said intermediate transfer drums into the receiving pockets of said receiving drum;

wherein each of said plurality of passageways is defined by partition walls extending downward from said hopper; and

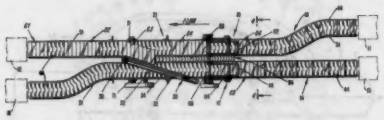
wherein each of said row-forming stations is positioned in a horizontal plane and comprises a horizontal abutment plate spaced from the lower end of said partition walls to form an open ended collecting space in which a single row of cigarettes is formed in a horizontal plane, and a jogger at each end of said collecting space movable in synchronism with the movement of said first pusher means.

4,364,465

COLLATING CONVEYOR SYSTEM

George R. Kraft, Clifton, N.J.; Albert V. Cole, Houston, Tex., and Henry E. Kimbrel, Fayetteville, Ga., assignors to Nabisco, Inc., East Hanover, N.J.

Filed Sep. 19, 1980, Ser. No. 188,715
Int. Cl.³ B65G *47/10*
U.S. Cl. 198—452 **7 Claims**



1. A collating conveyor arrangement comprising in combination first and second conveyors having parallel sections separated by a space, a third conveyor above said parallel sections of said first and second conveyors and positioned on-edge to direct articles obliquely from one of said parallel conveyor sections to the other, first and second dam mechanisms upstream of said on-edge conveyor for respectively controlling the flow of articles along said first and second conveyors, and means for operating said dam mechanisms to feed groups of articles alternately down said first and second conveyors toward said on-edge conveyor, said on-edge conveyor having a first end positioned above said space between said first and second conveyors, and said on-edge conveyor being pivoted about a vertical axis extending into said space for movement of the conveyor between a first position extending diagonally across first conveyor and a second position extending diagonally across said second conveyor, wherein said dam mechanisms include first and second pivoted arm assemblies mounted respectively above said first and second conveyors, said arm assemblies each including a roller mounted at the free end thereof, said arm assemblies being moveable between a lower position and an upper position, in said lower position said roller being positioned to engage the leading edge of and article on the conveyor associated with that arm and thus form a group of articles having a continuous top surface, in said upper position said roller is moved out of engagement with the leading edge of the engaged article to allow the group to move down the conveyor, and wherein said dam operating means includes first and second cam means for periodically raising said first and second arm assemblies respectively to said upper position briefly to release the group of articles and then lower the assembly to place the roller onto the continuous top surface of the group, whereby the assembly drops to the lower position when the last article in the group formed moves past the roller.

4,364,466

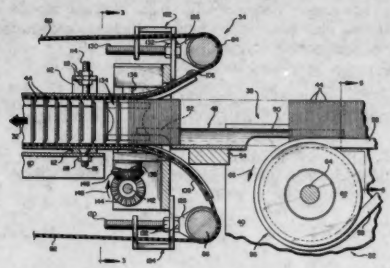
CAN END SEPARATOR-CONVEYOR

Wallace W. Mojden, Hinsdale, Ill., assignor to Fleetwood Systems, Inc., Countryside, Ill.

Filed Nov. 13, 1980, Ser. No. 206,456
Int. Cl.³ B65G *47/31, 47/26;* B65H *5/02*
U.S. Cl. 198—459 **7 Claims**

1. A conveyor system for handling a stack of can ends in face-wise engagement with the axes of the individual ends making up said stack being disposed generally longitudinally to a given path of movement for said ends, and for separating individual can ends from the stack and conveying said ends along said path while maintaining separation of the individual can ends and the generally longitudinal disposition of the can end axes, said conveyor system comprising; receiving means for receiving a stack of can ends in face-wise engagement; a pair of confronting conveyor members positioned substantially parallel to each other and disposed along and defining said path of movement for the can ends, said conveyor members being spaced apart to engage the edges of the can ends at diametrically opposed locations; drive means for imparting linear

movement to each said conveyor member and the can ends gripped thereby; and retarding means disposed intermediate said receiving means and said conveyor members for friction-



ally engaging the can ends to impart spacing between the individual can ends as they are engaged by said confronting conveyor members for movement along said path.

4,364,467

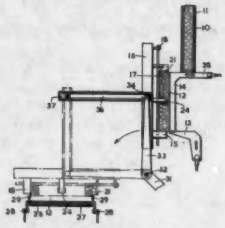
APPARATUS FOR HANDLING BISCUITS

Wallace J. Blakelock, Leeds, England, assignor to Baker Perkins Holdings Limited, Peterborough, England

Filed Dec. 29, 1980, Ser. No. 220,278

Int. Cl.³ B65G *25/00, 47/24*

U.S. Cl. 198—486 **4 Claims**



1. The combination of an infeed conveyor of a biscuit wrapping machine for conveying successive batches of biscuits along a horizontal path to said machine, a magazine disposed above said conveyor and adapted to contain a vertical column of superposed biscuits, said magazine including a vertically reciprocable bottom support for the biscuits in said column and a horizontally reciprocable pusher operative in timed relationship with the movement of said bottom support to deliver successive batches of biscuits from the magazine, a transfer unit for transferring said delivered batches of biscuits from the magazine to the infeed conveyor, said transfer unit being movable from a loading position adjacent to the magazine to a discharge position above the infeed conveyor and including a frame constituted by a platform which extends horizontally in the loading position to support the bottom of each batch of biscuits delivered from the magazine, a support which extends upwardly from the platform in said loading position to engage the edges of the biscuits in each delivered batch and extends horizontally above the biscuits in said discharge position, a jaw movable into engagement with the top of the batch at the loading position to apply resilient pressure thereto and grippers movable to engage opposite sides of the batch in the central region thereof, means for moving the transfer unit from the loading position to the discharge position in timed relationship with the movements of said bottom support and said pusher, and means for engaging said jaw and said grippers with each batch of biscuits when said transfer unit is in said loading position and for withdrawing said jaw and said grippers simultaneously from the batch when said transfer unit is in the discharge position to allow the batch to fall onto the infeed conveyor.

4,364,468

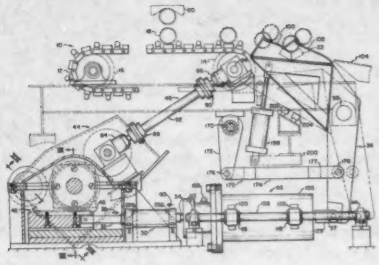
APPARATUS FOR CO-ORDINATING INDEXING MOVEMENT OF A CONVEYOR WITH PIVOTING OF A KICKOUT ARM ADJACENT THE DELIVERY END THEREOF

Andrew A. Hetra, Jr., Pittsburgh, and Charles W. Jacob, Crafton, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1981, Ser. No. 241,190

Int. Cl.³ B65G *25/00*

U.S. Cl. 198—489 **7 Claims**



1. Apparatus for driving an endless loop conveyor in indexing fashion and coordinating movement of a kickout arm therewith, said kickout arm being mounted adjacent a delivery end of said conveyor for removing workpieces therefrom, said apparatus comprising:

a double acting fluid powered cylinder means having first and second simultaneously reciprocable piston rods extending from opposite of the ends of said cylinder, said rods each having the axis thereof lying in the plane of said loop

means connected to the first of said rods for driving said loop upon movement of said rod in one of the directions of reciprocating movement thereof,

said kickout arm having an extension for rotating said arm about the pivot axis thereof from a lowered workpiece receiving position adjacent the end of said conveyor to a raised position for removal of said workpiece from the conveyor, and

means for operatively connecting and disconnecting said kickout arm from the second of said cylinder rods so that reciprocation of said rod will pivot said arm only while the conveyor loop is at rest between the intermittent movements thereof.

4,364,469

BOTTOM SUSPENSION ARRANGEMENT FOR A LIQUID SCREW CONVEYOR ASSEMBLY

Siegfried Rudolph, Hanover, Fed. Rep. of Germany, assignor to Schreiber-Klaranlagen Dr. Ing. Aug. Schreiber GmbH & Co. KG, Langenhagen, Fed. Rep. of Germany

Filed Feb. 18, 1981, Ser. No. 235,628

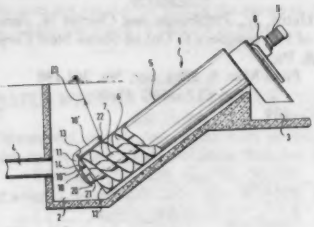
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1980, 3006057

Int. Cl.³ B65G *65/34, 33/32*

U.S. Cl. 198—616 **3 Claims**

1. A bottom suspension arrangement for a screw conveyor assembly, especially for the pumping of waste water, the assembly comprising a stationary cylindrical jacket having an open bottom end, a screw conveyor mounted within said jacket for rotation about a central axis thereof, said screw

conveyor including a central elongated tube and a spiral blade supported thereon, an anti-friction bearing extending outwardly of said bottom end of said jacket and supporting a bottom end of said core, the arrangement being attached to the screw conveyor assembly for suspending the bottom end thereof within a tank containing waste water to be pumped, said arrangement comprising a rigid, substantially L-shaped lever having one leg mounted at its terminal end on said bearing so as to provide a first attachment point, the other leg of said lever being spaced from and extending along an upper side of said jacket, said other leg having a suspension point at its terminal end for the attachment of a suspension device, said one leg overlapping radially with said open bottom end, and brace plates interconnecting said lever and said jacket, said plates being mounted along a portion of the inner periphery of said jacket at said open bottom end so as to provide a second attachment point.



4,364,470

SCRAPER-CHAIN CONVEYOR

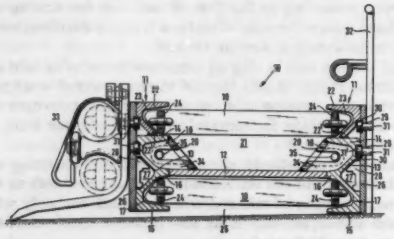
Helmut Temme, Waltrop, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed May 23, 1980, Ser. No. 155,996

Claims priority, application Fed. Rep. of Germany, May 26, 1979, 2921460

Int. Cl.³ B65G *19/28*

U.S. Cl. 198—735 **12 Claims**



1. A scraper-chain conveyor comprising:

(a) plurality of channel sections directly joined together end-to-end,

(b) each channel section having a pair of side walls interconnected by a floor plate,

(c) a scraper assembly comprising a plurality of scrapers connected to a drive chain,

(d) the side walls of the channel sections being shaped to define, together with the floor plates, three vertically-spaced ducts,

(e) the scrapers being guided in the uppermost and lowermost ducts,

(f) coupling means operatively associated with the middle ducts for connecting the channel sections together,

(g) said coupling means includes a toggle bolt having a shank provided at each end with an enlarged head,

(h) each toggle bolt mating with complementary recesses formed in a pair of inserts located at the adjacent ends of the middle ducts of the corresponding side walls of a pair of adjacent channel sections,

(i) the inserts of each pair including complementary projecting and recessed portions which mate with one another so that free play is provided between the channel sections when they are directly coupled together.

4,364,471

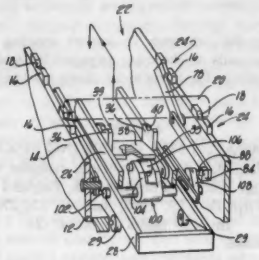
AUTOMATIC ACCUMULATING LIFT AND CARRY TRANSFER MECHANISM

James L. Furlette, 984 Bal Isle Dr., Fort Myers, Fla. 33907, and Donald A. Stadler, 10400 Hartland, Fenton, Mich. 48430

Filed May 8, 1980, Ser. No. 147,736

Int. Cl.³ B65G *25/00*

U.S. Cl. 198—751 **11 Claims**



1. A mechanical automatic accumulating transfer mechanism comprising:

an elongated frame, said frame comprising a plurality of work support members secured to and spaced longitudinally along said frame and on each lateral side thereof, said support members on opposite lateral sides of the frame being in alignment with each other and forming a work station along the frame adapted to receive and support a workpiece;

a main carriage assembly and means for longitudinally slidably mounting said main carriage assembly to said frame between a forward and a retracted position;

means for longitudinally reciprocally moving said main carriage assembly between said forward and said retracted position;

a plurality of lifting members pivotally secured to said main carriage assembly at longitudinally spaced intervals therealong so that at least one lifting member is associated with each work station, said lifting members being pivotal between an upper position and a lower position wherein in said upper position said lifting members engage and elevate a workpiece at their associated work station up from the work support members at said work station and wherein in said lower position said lifting members are positioned below a workpiece supported by the work support members at said work station;

means for moving said lifting members between their upper and lower position when said main carriage assembly is in its forward or retracted position, and

wherein said means for moving said lifting members between said upper and said lower position comprises:

an actuating carriage assembly and means for longitudinally slidably mounting said actuating carriage assembly to said main carriage assembly so that said actuating carriage assembly is movable between an actuating position and a nonactuating position with respect to said main carriage assembly;

means for longitudinally moving said actuating carriage assembly to its actuating position when said main carriage assembly is in its retracted position and for moving said

actuating carriage assembly to its nonactuating position when said main carriage assembly is in its forward position;

means secured to said actuating carriage assembly for pivoting said lifting members to their upper position as said actuating carriage assembly is longitudinally moved to its actuating position and for releasing said lifting members to their lower position when said actuating carriage assembly is longitudinally moved to its nonactuating position; and

wherein as said lifting members pivot from said lower position to said upper position, said workpiece is engaged and lifted exclusively by the pivoting of said lifting members.

4,364,472

PACKAGE FOR DIAMONDS AND OTHER PRECIOUS STONES

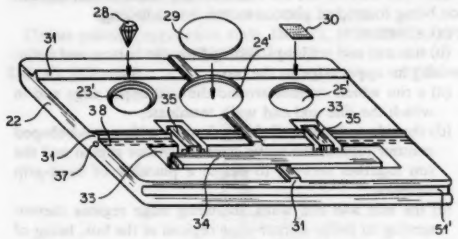
Othmar E. Waldmeier, Basel, Switzerland, assignor to Elas Trust Reg., Mauren, Switzerland

Continuation-in-part of Ser. No. 63,167, Aug. 2, 1979, Pat. No. 4,275,810. This application Apr. 24, 1981, Ser. No. 257,164

Claims priority, application Switzerland, Jun. 1, 1979, 5153/79

Int. Cl.³ B65D *25/54, 61/00;* **A45C** *11/16*

U.S. Cl. 206—45.34 **28 Claims**



1. A secure package for a precious stone comprising:

two substantially coextensive rigid members secured together and formed with respective throughgoing bores defining a compartment for a precious stone and secured together so as to prevent opening of the package without noticeable damage thereto;

respective rigid windows fixed in said members and enabling viewing of said stone within said compartment; and

at least one data carrier received in said package and provided with externally monitorable coded information relating to the stone in said compartment.

4,364,473

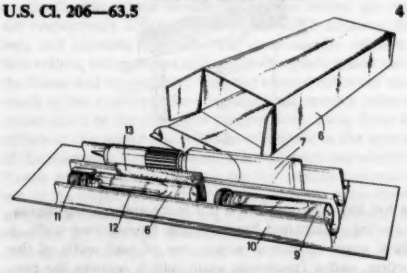
OUTFIT FOR REPAIR OF SPLIT DENTAL PROSTHESIS

Jean-Pierre Bogaert, Brussels, Belgium, assignor to Bonyf AG, Schaan, Liechtenstein

Division of Ser. No. 82,897, Oct. 3, 1979, Pat. No. 4,270,904. This application Jan. 5, 1981, Ser. No. 222,745

Int. Cl.³ B65D *85/32*

U.S. Cl. 206—63.5 **4 Claims**



1. An outfit for repairing a split or broken dental prosthesis comprising: a package; a tube of non toxic fast-setting adhesive having an affinity for the material the prosthesis is made of; container means for separately containing a monomer and polymer which when mixed together form a resin; and a support which is contained by said package said support including means for receiving and separately supporting said container means and said tube of adhesive.

4,364,474

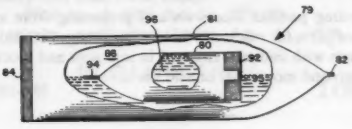
PACKAGES

Edward F. Hollander, Jr., Broomall, Pa., assignor to John P. Glass, d.b.a. Cava Industries, Essington, Pa.

Continuation of Ser. No. 720,084, Sep. 2, 1976, abandoned. This application Oct. 10, 1978, Ser. No. 950,174

Int. Cl.³ B65D *77/04, 77/12, 77/38*

U.S. Cl. 206—219 **4 Claims**



1. A package comprising an inner cylindrical tube of flexible material,

a first end of said tube being closed by a first ultrasonic seal extending transversely across the tube,

a second end of said tube being closed by a second rupturable ultrasonic seal extending transversely across the tube,

said tube providing an internal chamber between said seals for containing a fluid,

an outer cylindrical tube having a diameter larger than said inner tube,

said outer tube containing a fluid and said inner tube being contained within said outer tube separate from the sealed ends of the outer tube,

a first end of said outer tube being closed by a permanent ultrasonic seal extending transversely across the tube,

a second end of the outer tube being closed by a rupturable ultrasonic seal,

the rupturable seal of the inner tube being weaker than the rupturable seal of the outer tube,

whereby the contents of the inner tube may be discharged into the interior of the outer tube for mixture with the contents of the outer tube by squeezing the outer tube with sufficient force to rupture the rupturable seal of the inner tube but not the rupturable seal of the outer tube, and

whereby the mixture may be dispensed by squeezing the outer tube with sufficient force to rupture the rupturable seal of the outer tube.

4,364,475

MICROFICHE TRAY

Ronald D'Elia, Greenwich, Conn., assignor to Delco Associates, Inc., Greenwich, Conn.

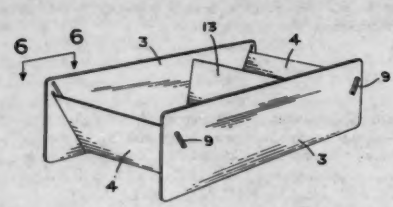
Filed Feb. 2, 1981, Ser. No. 230,437

Int. Cl.³ B65D *5/30, 5/48, 85/00*

U.S. Cl. 206—425 **11 Claims**

1. A tray for supporting juxtaposed articles comprising a base, a pair of opposite side parts and a pair of opposite end parts, said base said parts and end parts being made from a relatively thin, one-piece body, said side parts and end parts being upfolded from said base and interlocking means on said side parts and said end parts to lock said side parts and end parts in upfolded position, the articles being supportable in juxtaposed relation on the base, said interlocking means comprising tabs and slots, said tabs being on one of said pair of parts and said slots being provided in the other of said pair of parts, said tabs being engageable in said slots, said tabs and slots being

arranged to hold said side parts and end parts in secured, stable relation in upfolded position on said base, said one pair of parts having opposite edges at which said tabs project, said other pair of parts including ribs on opposite, sides of said slots



extending parallel therewith and projecting from said other pair of parts for releasably holding said edges of said first pair of parts with said tabs engaged in said slots and blocking relative pivotal movement of said parts.

4,364,476

PLASTIC LID WITH STACKING SEPARATION MEANS

Kenneth G. Weller, Golden Valley, and James V. Ostrum, St. Paul, both of Minn., assignors to Shamrock Industries, Inc., New Hope, Minn.

Filed Jan. 5, 1982, Ser. No. 337,164
Int. Cl.³ B65D *21/02, 43/10*
U.S. Cl. 206—508 **7 Claims**

1. An improved, stackable lid for containers comprising:

a substantially planar top wall, and a side wall formed integrally with said top wall from flexible material and depending from the periphery thereof as a skirt to form a container closure lid;

a raised stacking ring on the upper surface of said top wall extending around the periphery thereof at a location spaced radially inwardly from said side wall, thereby forming a stacking shoulder on said top wall between said ring and said side wall; and

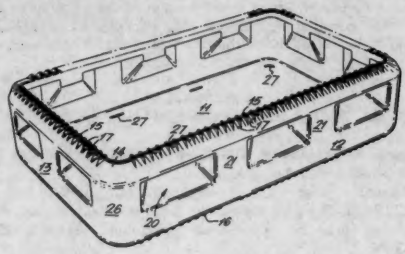
a plurality of protrusion segments spaced apart around the inside surface of said side wall and projecting inwardly therefrom, said protrusion segments being sized and located to contact the outer surface of a stacking ring on an adjacent one of said lids with which said lid may be vertically stacked, whereby the spaces between said protrusions around the inside surface of said side wall comprise vent openings between the stacking rings and side walls of adjacent ones of said lids when a plurality of said lids are stacked together with the bottom of the side wall of each lid resting on the said stacking shoulder of an adjacent lid.

4,364,477

PLASTICS FISH BOX

Per S. Stromberg, Raelingen N-2000, Lillestrom, Norway

Filed Jun. 16, 1978, Ser. No. 916,428
Claims priority, application Denmark, Jun. 17, 1977, 2689/77; United Kingdom, May 31, 1978, 24878/78
Int. Cl.³ B65D *21/02*
U.S. Cl. 206—511 **4 Claims**



1. A fish box for use on board fishing boats at sea, the fish box being formed of plastics material, and having:

(a) a bottom;

(b) side and end walls upstanding from the bottom and defining an upper edge to the box;

(c) a rim which extends around the said upper edge and in which the side and end walls terminate;

(d) the side and end walls being formed with a wave-shaped contour region, the wave-shaped contour region and the rim together serving to define a plurality of hand-grip recesses;

(e) the side and end walls, including edge regions thereof serving to define corner edge regions of the box, being of substantially the same thickness throughout and being formed with a substantially uniform thickness of material;

(f) the wave-shaped contour region being confined to respective upper portions of the side and end walls which are adjacent the rim; and

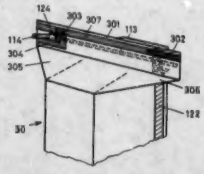
(g) the remaining lower portions of the side and end walls being smoothly formed without contour.

4,364,478

MANUFACTURE OF EASILY OPENABLE FOIL BAG

Heinz-Joseph Tiins, Dachsen, Switzerland, assignor to SIG - Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Mar. 6, 1981, Ser. No. 241,066
Claims priority, application Switzerland, Mar. 14, 1980, 2055/80
Int. Cl.³ B65D *3/26*
U.S. Cl. 206—605 **10 Claims**



1. In a foil bag composed of a foil piece and tearing means, the bag having a flattened head portion having two walls, a longitudinal seam extending across one of said walls of the head portion, and a transverse seam which secures the two walls of said head portion to each other, said transverse seam

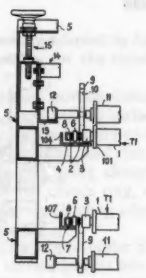
being transverse to, and crossing, the longitudinal seam in the head portion and sealing the bag, the tearing means being spaced from the transverse seam in the direction toward the interior of the bag, and serving to aid opening by permitting a wall of the head portion which is not traversed by the longitudinal seam and which extends approximately across the width of the head portion to be torn open, and the tearing means being in the form of a strip provided with a gripping part projecting from the bag, the improvement wherein: said bag is provided with a U-shaped passage opening composed of two cuts parallel to, and one cut perpendicular to, said transverse seam in the head portion; said gripping part extends through said opening from the interior of said bag to the exterior of said bag; and said bag is further provided with a seam parallel to said transverse seam and at the opposite side of said opening from said transverse seam, and a sealing seam intersecting said transverse seam and at least in part covering said transverse seam and said seam parallel to said transverse seam to form therewith a gastight seal around said passage opening.

4,364,479

AUTOMATIC MACHINE FOR SORTING OUT ROUND, OVAL OR FLAT FRUIT IN ACCORDANCE WITH THEIR DIAMETER

Alberto Sardo, Le Chesnay, France, assignor to Xeda International S.A., Le Chesnay, France

Filed Nov. 10, 1980, Ser. No. 205,615
Claims priority, application Italy, Dec. 21, 1979, 12871 A/79
Int. Cl.³ B07B *13/075*
U.S. Cl. 209—668 **2 Claims**



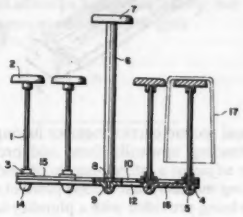
1. A machine for sorting out in particular fruit in accordance with their size, said machine comprising a frame, an endless conveyor which has an upper reach and a lower reach, the upper reach of the conveyor being movable from one end to an opposite end of the conveyor relative to the frame and the lower reach of the conveyor being movable from said opposite end to said one end of the conveyor relative to the frame, the conveyor comprising flexible means and first rollers which are rotatively mounted on the flexible means, are equally spaced apart, are parallel to each other, define gaps between the first rollers, second rollers, means for mounting the second rollers on the flexible means so that the second rollers are rotatable, are respectively located in planes between adjacent first rollers, and movable upwardly and downwardly relative to the first rollers, independent and adjustable guide means carried by the frame and cooperative with the second rollers of the upper reach of the conveyor for displacing the second rollers of the upper reach of the conveyor progressively away from the first rollers of the upper reach of the conveyor as the upper reach of the conveyor moves toward said opposite end relative to the frame, and means for rotating the first rollers and second rollers of the upper reach of the conveyor in the same direction at a required speed, whereby the fruit, disposed in spaces existing between the first and second rollers in the upper reach of the conveyor, is driven in rotation as the upper reach of the conveyor moves toward said opposite end and drops from said spaces when the second rollers move progressively away from the first rollers and the spacing between the first and second rollers is equal to or greater than the equatorial dimension of the fruit, second guide means for guiding the lower reach of the conveyor as the lower reach of the conveyor moves from said opposite end to said one end of the conveyor, the first rollers and second rollers of the lower reach of the conveyor being devoid of means for driving them in rotation and said second guide means being inoperative to drive the first rollers and second rollers of the lower reach of the conveyor in rotation, and means provided below the conveyor for receiving the fruit thus sorted out into different sizes.

4,364,480

GLASS STAND

Mutsuyuki Ohno, Nagoya, Japan, assignor to Cho-Jirushi Plastics Industry Co., Ltd., Aichi, Japan

Filed Apr. 4, 1980, Ser. No. 137,155
Claims priority, application Japan, Apr. 10, 1979, 54-47360[U]
Int. Cl.³ A47G *29/00*
U.S. Cl. 211—85 **2 Claims**



1. A glass stand for supporting a plurality of glasses with bottoms upward, said stand comprising,

a plurality of upper members,

a plurality of lower members,

a plurality of pivot means,

said members being arranged in the form of a pantagraph and having apertures located at cross points of said pantagraph for receiving said pivot means, said members being pivoted about said plurality of pivot means for expansion and contraction of said pantagraph,

each of said lower members having legs extending therefrom at respective sites of the apertures in said lower members and being mounted to respective ones of said pivot means received by said apertures, said pivot means extending from said lower members in a direction opposite from said legs,

said pivot means passing through the apertures of said upper members for pivotal connection therewith,

means extending upwardly from individual ones of said pivot means for engagement with said glasses, wherein

the pivot means has a larger diameter shaft portion complementarily disposed in a corresponding of said apertures of said upper members and a smaller diameter shaft portion coaxial to said larger diameter shaft portion complementarily disposed in a corresponding of said apertures of said lower members.

4,364,481

SHELF ORGANIZER

Albert A. Ricci, Yonkers, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,571
Int. Cl.³ B01B *23/00*
U.S. Cl. 211—184 **6 Claims**

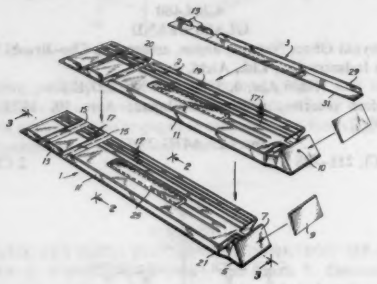
1. A variable shelf organizer adapted to being assembled to

give shelf organizers of different overall horizontal dimensions as well as product troughs of various sizes comprising:

(a) at least one regular organizer unit, at least one longitudinally perforated organizer unit and at least one end strip;

(b) said regular organizer unit comprising a longitudinally extending product supporting member provided with a first barrier member extending upward from said supporting member adjacent a lateral margin of said supporting member, said product supporting member also being provided with a plurality of longitudinal grooves adapted to engage a barrier member from an adjacent organizer unit;

(c) said longitudinal perforated organizer unit also comprising a second longitudinally extending product supporting



means and second barrier member having inner and outer legs extending upwardly from said product supporting member adjacent a lateral margin of said second product supporting member; said second product supporting member also being provided with a plurality of second longitudinal grooves having weakened lines formed at the bottom thereof whereby portions of said second product supporting member may be broken away to adjust the width of said shelf organizer; and

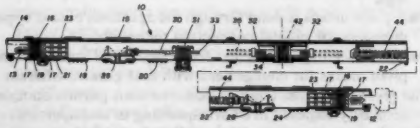
(d) said end strip being provided with a horizontal member adapted to engage an adjacent organizer unit and an upwardly extending member adapted to serve as the guard rail marking lateral termination of the shelf organizer.

4,364,482

APPARATUS FOR CUSHIONING SHOCK FORCES ACTING ON THE UNDERFRAME OF A RAILWAY CAR

Walter C. Dilg, Elma, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 7, 1980, Ser. No. 166,012
Int. Cl.³ B61B 9/12
U.S. Cl. 213—8 **2 Claims**



1. A cushion underframe for railway cars comprising:

a pair of spaced bolsters extending laterally of the car and having aligned openings;

a fixed sill extending lengthwise of the car through said aligned bolster openings;

a movable sill disposed within said fixed sill and extending lengthwise of the car through said aligned bolster openings, said movable sill being movable relative to said fixed sill lengthwise of said car;

cushion means disposed substantially adjacent each end of said sill for absorbing shocks generated during buff operating condition;

low reaction cushion element affixed to said movable sill and operable during initial increments of the sill's movement to cushion longitudinal shock forces applied to said sill;

stop means including a first plate attached to said movable sill on one side of a bolster and a second plate attached to the sill on the other side of the bolster equidistant from the first plate for limiting maximum lengthwise travel of said sill relative to said bolster;

additional cushion means attached to said movable sill and located at approximately the longitudinal center thereof;

means defining a pair of elongated slots formed in the movable sill on either side of said additional cushion means; and

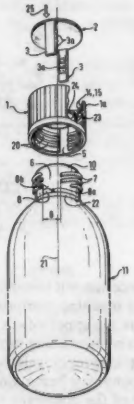
first and second follower members affixed to said fixed sill, with a first follower member extending within one of said slots and a second follower member extending within the other of said slots, the distance between said follower members and said cushion element being less than the distance between the stop means plates and bolster, with engagement between one of said follower members and said additional cushion means cushioning the impact force between said stop means and said bolster.

4,364,483

CHILD PROOF SCREW CAP

Erich Golde, Auf der Landwehr 4, 3280 Bad Pyrmont, Fed. Rep. of Germany

Filed Jul. 10, 1981, Ser. No. 282,235
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1981, 3103414; Mar. 16, 1981, 3110152; May 11, 1981, 3118592
Int. Cl.³ B65D 55/02
U.S. Cl. 215—218 **21 Claims**



1. A child-proof screw-cap for such containers as bottles, pill boxes and the like, consisting of a closure cap with an inside thread screwing on an outer thread of the container neck and which can be opened only by exerting an axial pressure on, in addition to the rotational motion of the closure cap, characterized in that the inside wall of the closure cap (1) is provided with a plurality of stakes (3) distributed over its circumference and extending parallel to the closure axis (21) and joined by a common cover plate (2) which can be actuated from the upper side of the closure cap (1), said stakes (3) being displaceably guided in grooves (5) in the inside wall of the closure cap (1) and being provided on their inside with threads meshing with the inside thread (20) of the closure cap (1), the outside thread (7) at the container neck (10) being provided with clearances (6) extending parallel to the closure axis (21) and of which the given width (B) exceeds the width of the stakes (3) and of which the angular spacing corresponds to that of the stakes (3), where furthermore two indexing positions are provided for the

component consisting of the stakes (3) and the cover plate (2), in the first of which the threads (3*a*) in the stakes (3) mesh with the threads of the inside thread (20) in the closure cap (1) while in the second indexing position they are relatively offset by about half a pitch and where the first indexing position can be brought about by axial pressure on the cover plate (2) in the direction of the container (11) and the second indexing position can be brought about by stop means (8) which at the end of the closing motion of the closure cap (1) act on the stakes (3) and/or the cover plate (2).

4,364,484

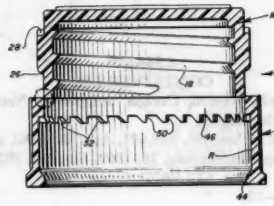
CHILD RESISTANT CLOSURE

John P. Kinsley, Crystal Lake, Ill., assignor to Seaquist Valve Company, division of Pittway Corporation, Cary, Ill.

Filed Jul. 29, 1981, Ser. No. 288,148

Int. Cl.³ B65D *55/02, 85/56;* A61J *1/00*

U.S. Cl. 215—220 **14 Claims**



9. A molded unitary assembly adapted to be formed into a child resistant closure assembly for the threaded neck of a container comprising:

an internally threaded closure portion defining an internal thread and an internal upper sealing surface,

said closure portion defining a sidewall providing a radially outwardly extending clutch ring, said clutch ring defining a multiplicity of upwardly facing closure teeth spaced about the periphery of the clutch ring, each said tooth providing a generally vertical leading edge and a substantially inclined trailing edge,

an open-topped collar portion, said collar portion comprising an outer gripping surface and an inner recess for receiving said clutch ring, and means defining said recess comprising a lower inwardly projecting retention bead and an upper collar clutch portion each of a diameter less than a diameter of said clutch ring, the lower surface of said clutch portion comprising a multiplicity of downwardly facing collar teeth, each said collar tooth defining a generally vertical leading edge and a substantially angled trailing edge,

a frangible web means connecting said collar portion and said closure portion with said clutch ring spaced vertically away from and out of said recess,

whereby when said closure and collar are forced towards each other, said frangible web is adapted to be broken and said clutch ring is adapted to be forced past a collar portion of lesser diameter then that of said clutch ring into said recess.

4,364,485

INJECTABLE FLUID CONTAINER AND METHOD

Julius Z. Knapp, Somerset, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed May 15, 1981, Ser. No. 263,816

Int. Cl.³ B65D *41/14, 41/20, 41/30*

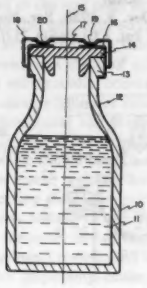
U.S. Cl. 215—232 **16 Claims**

1. A pilfer-proof container for injectable fluid comprising:

(a) a bottle having a neck,

(b) an elastomeric stopper sealing said neck,

(c) a inner seal fixedly secured to said neck to hold said stopper, said inner seal having an opening to allow penetration of said stopper, and



(d) an outer seal covering said opening removably attached to said inner seal with adhesive adapted to seal around said opening, said adhesive being non-flaking and non-rebondable upon removal of said outer seal.

4,364,486

PLUG-TYPE BOTTLE CLOSURE (PLASTIC CORK)

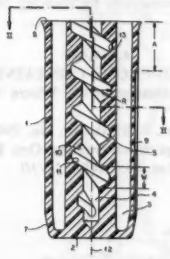
Rolf D. Korte, Domäne Dommelhof, 3543 Diemelsee-Ottlar, and Wilfried Rohlje, Sassmickerhammer 41, 5690 Olpe, both of Fed. Rep. of Germany

Filed Jul. 10, 1981, Ser. No. 282,160

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1980, 3027995

Int. Cl.³ B65D *39/04, 39/16*

U.S. Cl. 215—296 **5 Claims**



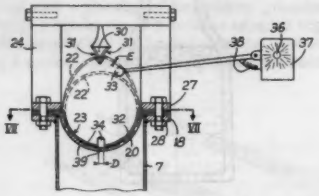
1. A plastic bottle cork comprising a unitary elongated body of synthetic-resin material formed with a hollow cylindrical outer member, a closed bottom, an axially extending core member connected to said bottom, and a plurality of angularly spaced radial walls bridging said members, said core member being formed with an elongated cavity closed in the region of said bottom and opened at the opposite end of said body, said cavity being formed with a passage conically tapering from said end toward said bottom, and a helical groove formed in the wall of said passage and having outwardly convergent flanks, the radius of said groove and the groove opening progressively diminishing from said end toward said bottom.

4,364,487

SAFETY DEVICE AGAINST OVERPRESSURES

Huguette Drumare, 28, rue du Commandant Vesco, Sainte Adresse, France (76310)

Filed Dec. 3, 1980, Ser. No. 212,427
Int. Cl.³ B65D 25/00
U.S. Cl. 220—89 A 2 Claims



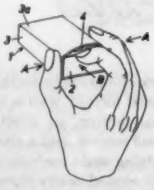
1. An overpressure relief device comprising fluid flow means providing a tubular passageway having an input end for connection to an enclosure with fluid under pressure and an output end for exhausting said fluid to the atmosphere, an imperforate, flexible membrane blocking said passageway and connected at its edge in fluid-tight relation to said means so as to prevent the flow of fluid from said input end to said output end, said membrane having insufficient strength by itself to prevent rupturing deformation thereof when the pressure at said output end exceeds the pressure at said input end by a predetermined amount, a perforate membrane holder mounted in said passageway between said membrane and said input end for engaging said membrane when it moves toward said input end, said holder having sufficient strength to prevent rupturing deformation of said membrane when the pressure at said output end exceeds the pressure at said input end by said predetermined amount, membrane perforating means mounted on said fluid flow means adjacent said membrane at the side thereof opposite from the side thereof at which said membrane holder is disposed for puncturing said membrane when it moves toward said output end under fluid pressure and by a predetermined distance away from said holder and detector means for indicating fluid pressure in said passageway less than the pressure required to cause said membrane to engage said membrane perforating means, said detector means having control means mounted in the path of movement of said membrane and engageable by said membrane prior to the time that said membrane engages said membrane perforating means.

4,364,488

CHILD-PROOF CONTAINER

Gunnar Anjou, Saltholmsgatan 43, Västra Frölunda, Sweden (421 76)

Filed Oct. 6, 1980, Ser. No. 194,346
Claims priority, application Sweden, Oct. 19, 1979, 7908671
Int. Cl.³ A45C 13/10
U.S. Cl. 220—281 9 Claims



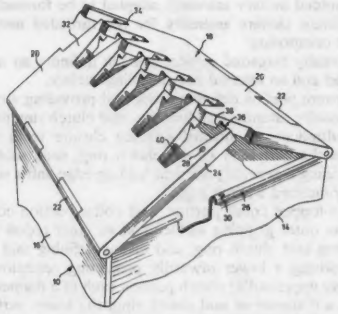
1. In a child-proof container of the type comprising a drawer which is slidably displaceable in a casing having at least one of its flat side walls made from a material which is flexible in the latitudinal direction and on the inside of said one flat side wall is provided with catch means extending therefrom towards the interior of the casing, the improvement wherein the casing comprises a tubular member which has a rectangular cross-section and is open a both ends, the catch means comprises at least two, spaced apart cam members located one near each one of the open ends of the casing and extending towards the interior thereof a distance exceeding the normal play between the casing and drawer, said cam members each having a substantially flat outer face inclined from said one flat side wall of said casing toward the adjacent open end and a substantially flat end face extending from and substantially perpendicular to said one flat side wall a distance sufficient to extend inside the edge of the adjacent end wall of the drawer when in the closed position thereby preventing unintentional opening of the container, and to release said edge to allow the drawer to be slidingly displaced to the open position by outward bending of said one flat side wall of the casing caused by forces acting toward said casing and substantially perpendicularly to the displacement direction of the drawer, the flat outer inclined face of the other cam member engaging said released edge to resist complete removal of said drawer from said casting.

4,364,489

CONTAINER LID

Victor Alexeeff, Weston, Canada, assignor to Nestier Canada Inc., Ontario, Canada

Continuation of Ser. No. 144,401, Apr. 28, 1980, abandoned.
This application Aug. 10, 1981, Ser. No. 292,879
Int. Cl.³ B65D 43/14, 51/04
U.S. Cl. 220—334 16 Claims



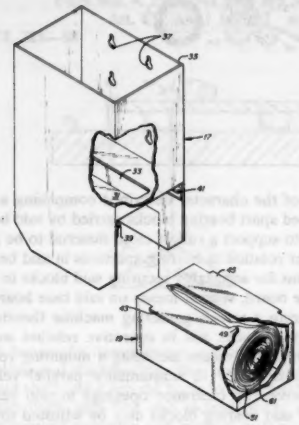
1. A stacking container having a bottom and two pairs of opposed side walls, a cover comprising two portions hinged to one pair of opposed side walls, the opposed lateral edges of each cover portion having means to engage the upper edges of the other pair of opposed side walls of the container when in closed position, the outer free edges of the cover portions meeting, when the cover is in closed position, to present a flat upper surface of the cover, said free edges each being crenellated, with a plurality of spaced teeth having recesses therebetween, to interfit one with the other when closed, means on the underside of each of at least a plurality of teeth and means located in each corresponding recess interengaging when the cover portions are closed to inhibit lateral separation of the cover portions one from the other, each cover portion being sealable one on each of the other pair of opposed side walls, said interengaging means comprising a notch on the underside of each of at least a plurality of said teeth and a substantially vertically disposed flange transversely bridging each of at least a plurality of said recesses, each of said notches having a substantially vertical face on that side of the notch towards the free end of the tooth, and each flange being positioned to lie in the notch of an interfitting tooth adjacent the vertical face thereof when the cover portions are closed.

4,364,490

REFUSE RECEPTACLE WITH BAG LINERS SUPPLIED THROUGH THE BOTTOM FROM REPLACEABLE LINER SUPPLY PACKAGES

John Lang, Pinole, and R. Scott Hunter, San Rafael, both of Calif., assignors to Eric Reiner, Hollywood, Calif.

Filed Jun. 2, 1980, Ser. No. 155,669
Int. Cl.³ B65B 67/04
U.S. Cl. 220—407 20 Claims



7. For a disposable material receptacle adapted to be lined by disposable bags that are fed one at a time into the receptacle from its bottom, a package of such disposable bags, comprising:

a container having top and side sufaces, said top surface being flat and rectilinearly shaped with an elongated slot therein opening into the interior of said container, said top surface extending beyond side surfaces on opposite sides of said slot to form outwardly extending flanges parallel to the length of said elongated slot, said flanges being stiff enough to support the weight of said package beneath said receptacle; and

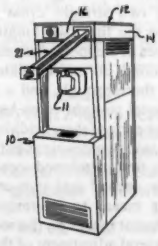
a plurality of bags carried within said container in a manner to continuously feed said bags of said slot one at a time in response to a bag being pulled out of said container through said slot.

4,364,491

HORIZONTAL ICE CREAM CONE DISPENSER

Lee E. Adamson, Roscoe, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Jan. 2, 1981, Ser. No. 222,124
Int. Cl.³ B65G 59/10
U.S. Cl. 221—267 8 Claims



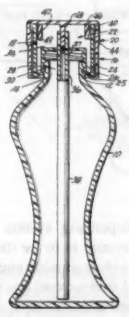
1. A horizontal cone dispenser adapted for dispensing fragile edible-type cones comprising, a generally horizontal stack tray for guiding a nested stack of the cones for movement along a generally horizontal path lengthwise of the stack, means defining a dispensing outlet at one end of the stack tray having resilient cone retaining fingers around the dispensing outlet for engaging the outer wall of the end cone at one end of the stack and releasably retaining that end cone so that the end cone can be manually grasped and withdrawn through the dispensing outlet, means for advancing a stack of cones toward the dispensing outlet with a substantially constant force, said stack advancing means including a follower mounted for movement along the generally horizontal stack tray for engaging the other end of the stack, a coiled band constant-force type spring means operative when the coiled band is extended to provide a substantially constant linear resisting force tending to recoil the band, means connecting the coiled portion of the constant-force type spring means to one of the items comprising the follower and tray and the outer end of the band to the other of said items such that the band is extended when the follower is moved away from the dispensing outlet with the extended portion of the band generally paralleling the path of movement of the stack of cones along the stack tray, the constant-force type spring means being selected to provide a substantially constant force which is sufficient to advance a stack of cones to the dispensing outlet, the resilient cone engaging means being arranged to retain the end cone with a cone retaining force sufficient to prevent ejection of the end cone through the dispensing outlet when the stack is advanced by said constant-force type spring means, the stack tray including first and second spaced side walls and first and second trackways extending lengthwise of the respective first and second side walls, the follower including first and second pairs of rollers engaging the respective first and second trackways at locations spaced apart longitudinally thereof.

4,364,492

EASY-DISPENSING SAFETY CAP

Cheung T. Kong, 192H Casuda Canyon, Monterey Park, Calif. 91754

Continuation-in-part of Ser. No. 136,430, Apr. 2, 1980, abandoned. This application Feb. 23, 1981, Ser. No. 236,661
Int. Cl.³ B67D 5/06
U.S. Cl. 222—205 9 Claims



1. An easy-dispensing safety cap for selectively providing difficulty or ease in dispensing a liquid from a container comprising:

(a) an inner measuring means for measuring liquid to be dispensed from a container, the inner measuring means comprising a generally cylindrical configuration with one open end, an outer annular wall and an inner annular wall spaced from the outer annular wall and joined to the other annular wall by a bottom to define an upwardly opening measuring chamber within the outer annular wall, a planar surface extending across the inner annular wall to form a downwardly opening cavity within the inner annular wall

which downwardly opening cavity provides means for engaging a container from which liquid is dispensed, a conduit extending through the planar surface for permitting fluid flow between the downwardly opening cavity and measuring chamber, means within the conduit for selectively permitting or preventing fluid flow therethrough and an outwardly extending lip on the outer annular wall having a notch therein; and

(b) an outer cap comprising a generally cylindrical configuration formed by a sidewall with at least one opening extending through the sidewall, a top extending between the sidewall forming a downwardly opening cavity for receiving the inner measuring means such that the inner measuring means can slide within the cavity, stopping means positioned along the sidewall for engaging the lip on the outer annular wall of the inner measuring means and for preventing the inner measuring means from sliding out of the downwardly opening cavity, the inner measuring means being freely slidable between the stopping means and top, and a projection having a channel for fluid flow therealong extending downwardly from the top such that the projection engages the means within the conduit for permitting or preventing fluid flow through the conduit effectively closing or opening the conduit to fluid flow when the outer cap is rotated about the inner measuring means.

4,364,493

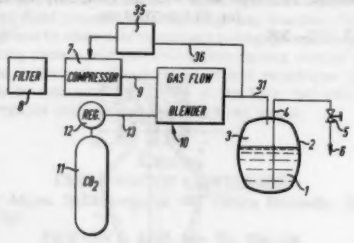
BEVERAGE DISPENSING SYSTEM

Stephen H. Raynes, Aylesbury, and David H. Miller, Higher Denham, both of England, assignors to Arthur Guinness Son and Company (Park Royal) Limited, London, England

Continuation-in-part of Ser. No. 66,611, Aug. 15, 1979, abandoned. This application Feb. 29, 1980, Ser. No. 125,909

Int. Cl.³ B65D *83/14*

U.S. Cl. 222—399 **25 Claims**



1. A beverage dispensing system comprising a container from which the beverage is to be dispensed by pressure of a gaseous mixture of carbon dioxide and a second gas comprising nitrogen; a source of said second gas which is to communicate under pressure and on demand with the container; a source of carbon dioxide under pressure which is capable of communication with the container by way of valve means, said valve means being responsive to gaseous pressure in the system whereby upon the gaseous mixture being demanded for dispensing, pressure means by which the second gas under pressure is supplied on demand causes the valve means to be actuated to open communication between the source of carbon dioxide and the container and upon the demand for the gaseous mixture ceasing the valve means closes communication between the source of carbon dioxide and the container, and wherein the development of pressure of said second gas in the system by said pressure means causes the valve means to be actuated.

4,364,494

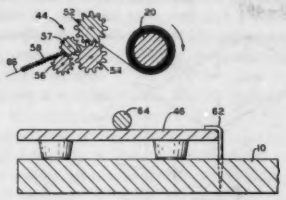
SMOCK GATHERING APPARATUS

Stewart S. Shive, Jr., New Haven, Ind., assignor to Janice R. Filbert, New Haven, Ind.

Filed Nov. 19, 1980, Ser. No. 208,196

Int. Cl.³ A44C *5/00*; B62J *7/00*

U.S. Cl. 223—28 **11 Claims**



1. Apparatus of the character described comprising a base board, two spaced apart bearing blocks carried by said board, a shaft adapted to support a roll of cloth material to be gathered mounted for rotation in bearing apertures in said bearing blocks, first means for adjustably securing said blocks in position on said base board, second means on said base board for removably securing a smock gathering machine thereto between said bearing blocks and in operative relation to said shaft, said first securing means including a mounting rod secured to said base board in substantially parallel relation thereto and received by clearance openings in said bearing blocks whereby said bearing blocks may be adjusted toward and away from each other in parallelism with said shaft.

4,364,495

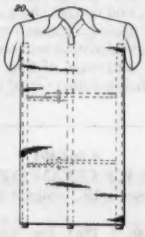
GARMENT STRETCHER

Alice R. Walker, Rte. 1, Box 279 B, Ocean City, Md. 21842

Filed Jun. 5, 1980, Ser. No. 156,844

Int. Cl.³ A41H *5/00*

U.S. Cl. 223—61 **7 Claims**



1. An improved garment stretcher comprising three straight longitudinal bars, the first two being held in fixed spatial relationship by means of two straight cross bars permanently secured at each end to the first two longitudinal bars, these cross bars having a series of stepped adjustment means on their upper surface, the second or intermediate longitudinal bar having two openings therethrough, and a third longitudinal bar having two additional straight cross bars secured to it at one end of each, the free ends of these additional two cross bars extending through the said two openings in the second longitudinal bar to overlap the first-mentioned secured cross bars, the free end of each of the second said two cross bars having a depending cooperating means to interengage with the said series of stepped adjustment means on the secured two straight cross bars to provide lateral adjustment of the stretcher, means being provided for positively locking the cooperating interengaging means on the overlapping cross bars, said series of stepped adjustment means on the two secured cross bars com-

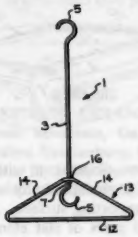
prising a series of spaced indentations, and the said depending cooperating means on the free end of each of the two overlapping cross bars comprises a detent member.

4,364,496

COAT HANGER

Bruce B. Bridgeman, 8404 N. Shore Blvd., Marblehead, Ohio 43440

Filed Sep. 8, 1980, Ser. No. 185,242
Int. Cl.³ A47J *51/08*
U.S. Cl. 223—88 **8 Claims**



1. A hanger for hanging on a support surface comprising:
an elongated shaft having a first hook located on one end of said shaft and a second hook located on the other end of said shaft, said first and second hooks constructed for selectively engaging said support surface;
a single flange positioned on said shaft and extending radially outward from said shaft, said flange being positioned substantially adjacent one end of said shaft and adjacent said first hook;
keying means positioned on said shaft adjacent to said flange, said keying means including a first keying means positioned adjacent said side of said flange that faces said first hook and a second keying means that is positioned adjacent said side of said flange that faces said second hook; and
a garment supporting portion removably positioned on said shaft, said portion defining an aperture for receiving said shaft, said aperture having a configuration that mates with said keying means on said shaft, said aperture mating with said first keying means when said first hook is used to support said hanger on said support member and said aperture mating with said second keying means when said second hook is used to support said hanger on said support member, said flange retaining said portion in alignment with said keying means on said shaft whereby said aperture of said garment supporting portion can be positioned in engagement with said first keying means to position said garment supporting portion adjacent said first hook and whereby said aperture of said garment supporting portion can be positioned in engagement with said second keying means to position said garment supporting portion in spaced apart relationship with said second hook, whereby the position of said garment supporting portion with respect to said support surface can be varied.

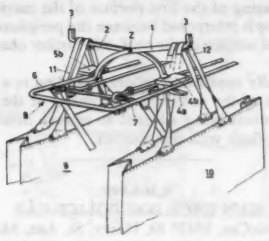
4,364,497

DEVICE FOR SUPPORTING PARCELS ON A PARCEL RACK OF A TWO-WHEELED VEHICLE

Paul Zimmerli, CH-4467 Rothenfluh, Switzerland

Filed Feb. 12, 1981, Ser. No. 233,729
Claims priority, application Switzerland, Feb. 18, 1980, 1304/80
Int. Cl.³ B62J *9/00*
U.S. Cl. 224—40 **6 Claims**

1. A device for supporting parcels on a parcel rack of a two-wheeled vehicle, comprising means for detachably suspending parcels in a freely suspended position laterally from the rear wheel of the vehicle, said means consisting of two elongated levers which are pivotably connected to one another at a common pivot axis and cross one another in a scissorslike manner, the upper end of each lever being constructed as a receiver for the parcel, and the lower end of each lever being



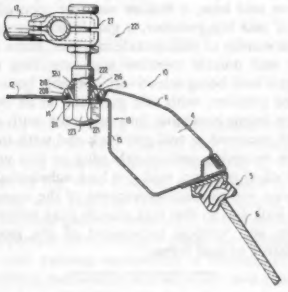
provided with a mounting member mountable from the inside on a longitudinal beam of the parcel rack in such a way that, when the parcel rack is subjected to the load of one or more suspended parcels, both mounting members are pressed against the longitudinal beams of the parcel rack.

4,364,498

FASTENING DEVICE FOR ROOF CARRIER OF A MOTOR VEHICLE

Olaf Kuus, and Jakob Relovsky, both of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz A.G., Stuttgart, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,636
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1979, 2903682; Jul. 2, 1980, 3004447
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—42.45 R **6 Claims**



1. A fastening arrangement for fastening a carrier to a roof of a motor vehicle, the motor vehicle including a support member extending in a longitudinal direction of the vehicle and disposed at respective side edges of the vehicle, characterized in that the fastening arrangement includes a carrier bracket adapted to be mounted near a side edge of the motor vehicle, a threaded bore means is provided in the carrier bracket for accommodating a threaded portion of the carrier holder means, and in that a cover means is detachably insertable into the threaded bore means so as to seal the bore means when the carrier holder means is not accommodated in the bore means,
wherein the roof is provided with an opening in an area in which the carrier bracket is to be mounted, characterized in that the carrier bracket includes a first portion disposed below a surface of the roof and a second portion which extends through the opening in the roof and terminates

above an upper surface of the roof, the carrier bracket includes a peripheral flange on the second portion thereof, the peripheral flange has a lower portion adapted to bear against the upper surface of the roof with a predetermined pretensioning,

the first and second portion of the carrier bracket are integrally formed, and the carrier bracket is fixed at the roof by a swaging of the first portion of the carrier bracket,

a seal means is interposed between the peripheral flange and the upper surface of the roof, and further characterized in that

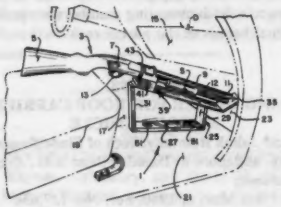
two mutually opposed members extending in a longitudinal direction of the vehicle are provided at the flange, said two members being adapted to receive decorative strips that join flush with one another.

4,364,499

GUN RACK FOR POLICE CAR

Maurice H. McCue, 10625 St. Henry, St. Ann, Mo. 63074

Filed Apr. 22, 1981, Ser. No. 256,004
Int. Cl.³ B60R 7/04
U.S. Cl. 224—42.45 R **10 Claims**



1. A holder for securely mounting a weapon in a vehicle in such a position that the barrel of the weapon extends along an axis other than a vertical axis, said holder comprising a frame including a generally horizontal base and a top member positioned above said base, a muzzle member secured to the forward end of said top member, a gun lock secured to the top member rearwardly of said muzzle member, and a muzzle plug secured to said muzzle member and extending toward said lock, said gun lock being selectively operable between an open and a closed position, with said gun lock in its open position said weapon being insertable into said rack with a portion of said weapon received in said gun lock and with the muzzle of said weapon receiving said muzzle plug so that with said gun lock in its locked position, said gun lock substantially prevents axial, sidewise and vertical movement of the weapon relative to said gun lock and so that said muzzle plug prevents substantial sidewise and vertical movement of the muzzle of the weapon relative to said frame.

4,364,500

VEHICLE LUGGAGE CARRIER

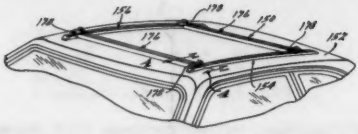
John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Continuation of Ser. No. 57,346, Jul. 13, 1979, abandoned, and a continuation of Ser. No. 952,393, Oct. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 798,576, May 19, 1977, abandoned, which is a continuation-in-part of Ser. No. 725,500, Sep. 22, 1976, Pat. No. 4,156,497. This application Feb. 27, 1981, Ser. No. 239,128
Int. Cl.³ B60R 9/00
U.S. Cl. 224—325 **18 Claims**

1. An article carrier for use on a generally horizontally disposed surface of an automotive vehicle, said carrier comprising:

a first pair of spaced parallel slat elements fixedly secured to the vehicle surface, said slat elements having upper article supporting surfaces located between said generally horizontally disposed surface and the lower side of articles on said carrier, each of said slats having major and minor transverse cross-sectional dimensions with said major dimensions being parallel to said generally horizontally disposed surface;

a second pair of spaced parallel slat elements arranged at generally right angles to said first mentioned pair thereof, said second pair of slat elements having upper article supporting surfaces located between said generally horizontally disposed surface and the lower side of articles on said carrier, each of said second pair of slats having major



and minor transverse dimensions with said major dimensions being parallel to said generally horizontally disposed surface and said supporting surface;

said first and second pairs of slat elements lying directly adjacent the surface of the vehicle and adapted to have articles bear thereupon; and

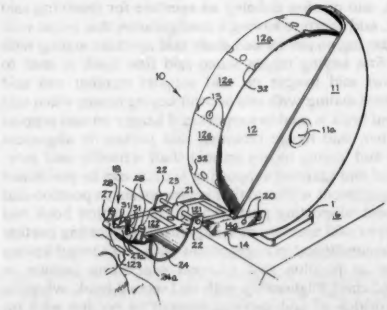
manually engageable means for adjustably and removably securing said second pair of slat elements to said first pair of slat elements wherein said second pair of slat elements is adjustably movable longitudinally along said first mentioned pair of slat elements and is completely removable from said first pair thereof.

4,364,501

DISPENSER FOR ROLL OF TICKETS IN STRIP FORM

John S. Curtiss, Jr., Belmont, Calif., assignor to Instrumental Products, Redwood City, Calif.

Filed Dec. 15, 1980, Ser. No. 216,195
Int. Cl.³ B26D 1/02
U.S. Cl. 225—13 **4 Claims**



1. A ticket dispenser assembly for delivering tickets in strip form from a roll thereof, the tickets being of a type having openings therethrough disposed between successive tickets, said dispenser comprising means for supporting a roll of such tickets to rotate in response to withdrawal of each ticket therefrom, means forming a ticket guiding and dispensing unit defining a path for delivery of tickets including means forming a cutting assembly at the dispensing end of said path, said cutting assembly including a plurality of pegs for penetrating the openings between successive tickets, means supporting said pegs, a cutting blade carried by the last named means and formed to include a plurality of teeth corresponding in number substantially to the number of said pegs, said teeth pointing

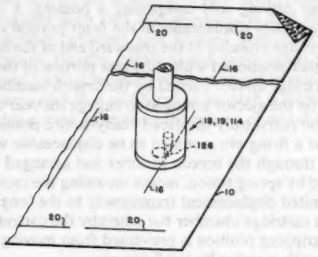
rearwardly of the direction of movement of the tickets, to restrain the strip of tickets as the leading ticket is drawn against said blade to separate said leading ticket from a waiting ticket therebehind, means forming a first station for retaining a ticket against the surface of the path, means forming a second station supporting a waiting ticket between said penetrating means and said first station, the last named means serving to dispose said waiting ticket substantially unobstructed from both above and below to readily permit the ticket to be engaged between a person's thumb and index finger when lifting and advancing the waiting ticket along said path to dispose openings between a pair of successive tickets onto said pegs.

4,364,502

LINE SENSOR ARRANGEMENT

Zane Frentress, Stone Mountain, Ga., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Jun. 23, 1980, Ser. No. 161,929
Int. Cl.³ B65H *25/02, 25/26*
U.S. Cl. 226—45 **1 Claim**



1. A magnetic sensor to detect a ferrous mark on a moving web of material comprising: a substantially cylindrical housing having a central axis, a sensor mounted in said housing, said sensor having a permanent magnet mounted therein, a pole piece mounted in said sensor adjacent said permanent magnet having its centerline offset from the centerline of said cylindrical housing, a coil in said pole piece adjacent one end of said housing and a plurality of wires connected to and projecting from said sensor to provide a connection means to transmit a voltage generated when said sensor is rotated around a ferrous material.

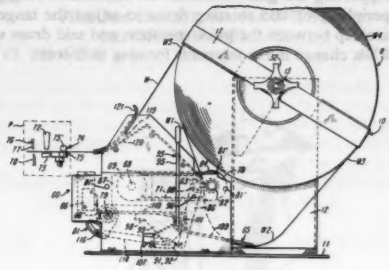
4,364,503

WEB FEEDING METHOD AND APPARATUS FOR A PRINTER

David J. Ivary, Costa Mesa, Calif., and Raymond L. Kirby, Jr., Vandalia, Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 152,057, May 20, 1980, Pat. No. 4,331,302. This application Sep. 21, 1981, Ser. No. 304,213
Int. Cl.³ B65H *25/02, 25/24*
U.S. Cl. 226—45 **5 Claims**

1. Web feeding apparatus, comprising: means for holding a roll of web material, a first web feeding device for drawing the web from the roll, a second web feeding device, a utilization device, the web being drawn through a path from the roll by the first web feeding device and from the first web feeding device into a U-shaped buffer loop and from there over the roll and over to the second feeding device to the utilization device, means for sensing the extent of the buffer loop, and means responsive to the sensing means for engaging the first feeding means when the buffer loop shortens to a certain extent and for



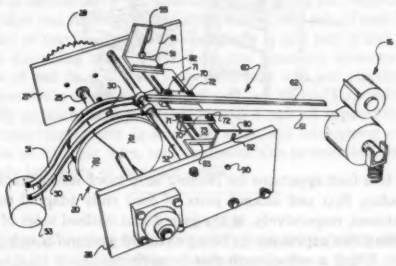
disengaging the first feeding means when the buffer loop lengthens to a certain extent.

4,364,504

FEEDING DEVICE

George Meyers, Ashland, Ohio, assignor to The Garber Company, Ashland, Ohio

Filed Oct. 3, 1980, Ser. No. 193,539
Int. Cl.³ B65H *17/38*
U.S. Cl. 226—76 **3 Claims**



1. Apparatus for handling web material having individual images successively formed thereon and successive cut lines therein which cut lines are curved transverse to the direction of movement of the web material, said apparatus advancing and registering web material relative to a cutting mechanism which cuts the web material transverse to the advancing direction, said apparatus comprising a guide for guiding said web material to said cutting mechanism, a rotating drum spaced from said cutting mechanism and adjacent said guide, projecting elements on said rotating drum and spaced circumferentially on said rotating drum a distance substantially equal to the distance between said cut lines, said projecting elements having a surface portion extending chordally relative to said drum and beyond the periphery of said drum for engaging at least a portion of said web material adjacent said cut line and forcing at least a portion of said web material out of the plane of said web material and for projecting through said plane of said web material, said projecting elements having a further curved surface portion extending transverse to the direction of movement of the web material for engaging the edge of said web material at said cut line and advancing the web material through said guide and to said cutting apparatus, said drum being formed of plural arcuate segments having a predetermined circumference, a drive shaft on which said segments are mounted, means for securing said segments together and for removably clamping said segments on said drive shaft for rotation therewith and for removal therefrom for replacement by other segments of a different circumference when the dis-

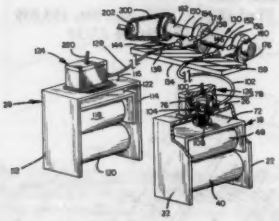
tance between the cut lines in the web material changes, said guide for guiding the web material to the cutting mechanism comprises a pair of U-shaped lateral guide members, and means for supporting the guide members for adjustment relative to the periphery of said rotating drum to adjust the tangential relationship between the guide members and said drum when there is a change in the segments forming said drum.

4,364,505

DOUBLE FEED ROLL LIFT MECHANISM

Robert L. Schockman, St. Henry, Ohio, assignor to The Minster Machine Company, Minster, Ohio

Filed Jan. 30, 1981, Ser. No. 230,020
Int. Cl.³ B65H *17/22*
U.S. Cl. 226—154 **17 Claims**



1. In a feed apparatus for feeding strip stock into a machine including first and second pairs of feed rolls adapted to be positioned, respectively, at the infeed and outfeed sides of the machine, the improvement being a roll lift system for independently lifting a roll of each pair comprising:

first means for urging one of the rolls of said first pair in a first direction either toward or away from the other roll of said first pair,

a first expansible chamber means connected to said one roll for urging said one roll in a second direction opposite said first direction toward or away from the other roll of said first pair when the expansible chamber means is pressurized,

second means for urging one of the rolls of said second pair in a third direction either toward or away from the other roll of said second pair,

a second expansible chamber means connected to said one roll of the second pair for urging said one roll of the second pair in a fourth direction opposite said third direction toward or away from the other roll of said second pair when the expansible chamber means is pressurized,

first and second positive displacement hydraulic actuator means connected to said first and second expansible chamber means, respectively, and each comprising a plunger, said actuator means pressurizing the respective expansible chamber means when the plunger thereof is actuated,

a shaft rotatable about the axis and having a pair of cam elements mounted thereon, said shaft being mounted in close proximity to said plungers whereby said plungers are actuated by the cam elements as the shaft rotates, and

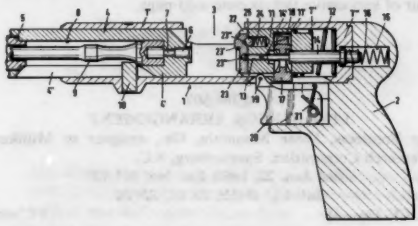
means for adjusting the angular positions of said cam elements on said shaft independently of each other.

4,364,506

FASTENER DRIVING TOOL WITH CARTRIDGE EJECTOR

Fritz Schneider, Burgbernheim, Fed. Rep. of Germany, assignor to Impex-Essen, Vertrieb von Werkzeugen GmbH, Ansbach, Fed. Rep. of Germany

Filed Jan. 26, 1981, Ser. No. 228,378
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003223
Int. Cl.³ B25C *1/14*
U.S. Cl. 227—10 **5 Claims**



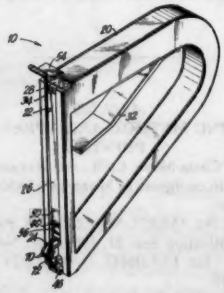
1. A fastener driving tool comprising a housing, a barrel mounted to be axially displaceable in the front portion of the housing, a cartridge chamber at the rearward end of the barrel, a breech member positioned within the rear portion of the tool housing, a cartridge ejector carried by the breech member, an ejector catch on the ejector arranged to engage the rear of the cartridge in the rearwardly displaced ready-to-fire position of the barrel, and a firing pin mounted to be displaceable within an axial bore through the breech member and arranged to be thrust forward by spring action, means mounting the cartridge ejector for limited displacement transversely to the longitudinal axis of the cartridge chamber but whereby the cartridge in its cartridge-gripping position is prevented from moving relative to the breech member by the firing pin.

4,364,507

VARIABLE CLOSURE SURGICAL STAPLING APPARATUS WITH RETRACTABLE ANVIL

Dominick J. Savino, 65 Buttonwood Rd., Staten Island, N.Y. 10304

Filed Mar. 23, 1981, Ser. No. 246,145
Int. Cl.³ B25C *5/04*; A61B *17/04*
U.S. Cl. 227—83 **11 Claims**



1. A surgical apparatus for suturing skin with deformable staples comprising:

a housing having an elongated drive track with one end thereof adapted to be placed against the skin;

means for feeding staples to said drive track at a point adjacent said one end;

anvil means of generally crescent-shaped configuration having opposed ends, with one end thereof including a forming member and with the remaining end thereof including a locking projection, said anvil means being pivotally mounted to said housing, adjacent said one end of said drive track with said forming member extending into said drive track;

an elongated anvil release element mounted for reciprocal movement in said drive track above said anvil means, and with the lower end thereof including an aperture disposed adjacent to and above said locking projection of said anvil means; and

an elongated driver element mounted for reciprocal movement in said drive track and disposed over said staple and in coplanar relationship with said anvil release element, said driver element being interposed between said anvil means and said anvil release element, said driver element including an aperture disposed above said locking member of said anvil means and with the lower end of said driver element including a configuration to aid in deforming said staple such that upon downward actuation of said driver element, the latter bears upon the staple such that it is deformed about said forming member in said drive track and wherein said staple is released from said apparatus by the downward actuation of said anvil release element in a manner such that said apertures in said elements are in register, adjacent said locking projection of said anvil means, thereby enabling said anvil means to pivot, with said locking member being received in said aligned apertures such that said forming member is retracted from said drive track permitting the release of said deformed staple.

4,364,508

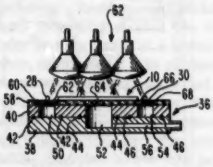
METHOD OF FABRICATING A SOLAR CELL ARRAY

Angelo G. Lazzery, Oaklyn; Marvin S. Crouthamel, Pennsauken, and Peter J. Coyle, Oaklyn, all of N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 14, 1980, Ser. No. 196,205

Int. Cl.³ H01L *21/98, 21/70*

U.S. Cl. 228—106 **8 Claims**



1. A method of fabricating a solar cell array in which each cell is pretabbed comprising:

assembling the tabbed cells in a predetermined array with at least part of each tab facing upward, each tab being fixed to a bonding pad on one cell and abutting a bonding pad on an adjacent cell;

holding the cells in place with a first vacuum support means;

inverting the array onto a second vacuum support means which holds the tabs firmly against the pads they abut; and

applying heat to the array for bonding the tab portions not already fixed to bonding pads to these pads.

4,364,509

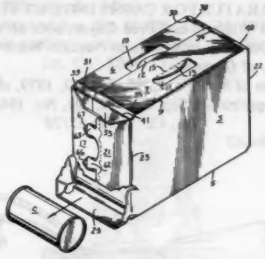
ARTICLE CARRIER WITH DISPENSING FEATURE

John M. Holley, Jr., Clarkston, and James R. Oliff, Austell, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Jun. 25, 1981, Ser. No. 277,096

Int. Cl.³ B65D *5/70, 5/72*

U.S. Cl. 229—17 B **4 Claims**



1. An article carrier comprising a bottom wall, a pair of side walls joined respectively to the side edges of said bottom wall and extending upwardly therefrom, a top wall joined along the side edges thereof respectively to the upper edges of said side walls, a pair of end flaps foldably joined respectively to the ends of said side walls at one end of the carrier, another end flap foldably joined to the end of said bottom wall at said one end of the carrier, a web panel interconnecting each end of said another end flap and the adjacent one of said pair of end flaps, a pair of tear lines formed respectively in said pair of end flaps and extending respectively from the junctions between said pair of end flaps and the associated side wall and terminating respectively along the edges of said pair of end flaps substantially adjacent said web panels, and a pair of expansion slits formed respectively in said side walls and comprising extensions of said tear lines, said expansion slits terminating respectively interiorly of said side walls.

4,364,510

FILLING VALVE FOR A BAG OR OTHER CONTAINER

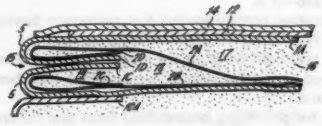
Archibald Buchanan, Ellon, Scotland, assignor to B.P.B. Industries Limited, London, England

Filed Jul. 18, 1980, Ser. No. 170,159

Claims priority, application United Kingdom, May 2, 1980, 8014577

Int. Cl.³ B65D *30/24*

U.S. Cl. 229—62.5 **10 Claims**



1. A container for particulate material comprising a body portion for containing the particulate material and two flexible superposed sheets of different materials fixed to the body portion, one sheet being more flexible than the other; the superposed sheets being folded to form a tubular structure which defines an access channel for the introduction of the particulate material into the body portion; the respective sheets defining between them, at an inner end of the tubular structure, a first pocket in which the particulate material from the body portion may accumulate, thereby constricting an inner end of the channel and preventing reverse flow of the particulate material from the body portion to the inside of the channel; and an outer end of the tubular structure being inwardly turned so that the

respective sheets define between them a second pocket in which particulate material from within the channel may accumulate, thereby constricting an outer end of the channel and preventing reverse flow of the particulate material from the channel to outside the container.

4,364,511

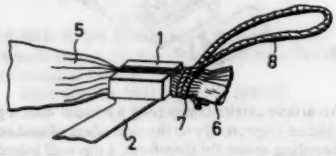
CLOSURE TIE FOR TUBES OF FILM MATERIAL FOR ENCLOSING FOOD, A METHOD OF FORMING THE TIE AND APPARATUS FOR CARRYING OUT THIS METHOD

Hans-Dieter Wittern, and Fred Geyer, both of Weinheim, Fed. Rep. of Germany, assignors to Naturin-Werk Becker & Co., Fed. Rep. of Germany

Continuation of Ser. No. 7,295, Jan. 29, 1979, abandoned. This application Sep. 5, 1980, Ser. No. 184,650

Int. Cl.³ B65D *33/28*

U.S. Cl. 229—63 **12 Claims**



1. A tube of film material having a closed end for enclosing food and having a closure tie at said closed end, said tie being situated in a permanently, thermoplastically deformed groove-like recess in said film material, which tube is made of a thermoplastic or thermoplastic-like material, wherein:

(1) the closed end is formed by gathering the tube in a region to be closed by said closure tie;

(2) the gathered thermoplastic material is softened in the region where said closure tie is to be applied;

(3) the gathered plastic is permanently deformed by pressure while in the softened condition to form said groove-like recess, and thereafter allowed to harden; and

(4) said closure tie is firmly engaged within the said groove-like recess, formed in the gathered plastic by softening, deforming, and allowing to harden, whereby said closure tie will not slip from the gathered plastic under tension.

4,364,512

ZONE HEAT CONTROL

Thomas R. Morrison, 123 Overlook St., Mount Vernon, N.Y. 10052

Filed Dec. 11, 1980, Ser. No. 215,270

Int. Cl.³ F22B *35/00;* **F24D** *3/00;* **F04B** *49/00*

U.S. Cl. 236—9 A **8 Claims**

1. A heating control system for a structure having at least first and second heated areas comprising:

a first heat delivering device in said first heated area;

a second heat delivering device in said second heated area;

a furnace;

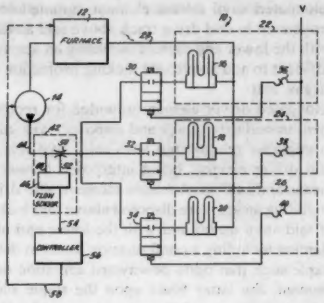
means for delivering heated fluid from said furnace to said first and second heat delivering devices;

first means for controlling delivery of said heated fluid to said first heat delivering device in response to a first temperature in said first heated area, said first means for controlling delivery having an open, condition in response to said first temperature being below a first predetermined value and a closed condition in response to said first temperature being above said first predetermined value;

second means for controlling delivery of said heated fluid to said second heat delivering device in response to a second temperature in said second heated area, said second means for controlling delivery having an open condition in response to said second temperature being below a second predetermined value and a closed condition in response to said second temperature being above said second predetermined value;

means for periodically attempting to flow a fluid through said first and second means for controlling delivery;

means for sensing flow of said fluid to said first and second means for controlling delivery; and



means for energizing said means for delivering and said furnace as long as a predetermined flow of said heated fluid, indicative of at least one of said first and second means for controlling delivery being in its open condition, is sensed by said means for sensing flow.

4,364,513

AIR-CONDITIONING CONTROL APPARATUS FOR AUTOMOTIVE VEHICLES

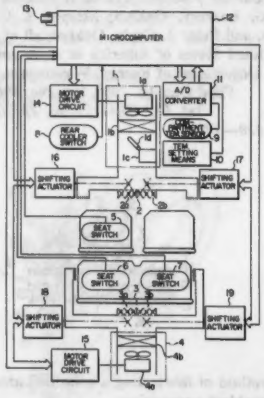
Yoshihiko Tsuzuki, Anjo; Yuzi Hirabayashi, Aichi; Shinji Shirasaki; Masahiro Matsuyama, both of Kariya, and Hiroshi Okazaki, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 3, 1980, Ser. No. 212,747

Claims priority, application Japan, Dec. 12, 1979, 54-162099

Int. Cl.³ F24F *7/00;* **B60H** *1/00*

U.S. Cl. 236—49 **4 Claims**



1. In an automobile air-conditioning control apparatus including compartment temperature sensor means for sensing the temperature of a vehicle compartment of an automobile, means for supplying temperature-adjusted air into said vehicle compartment to adjust said compartment temperature sensed by said temperature sensor means to a desired temperature for compartment air-conditioning, and shifting means for changing the direction of flow of said temperature-adjusted air

blown into said vehicle compartment thereby controlling the air-conditioning of said vehicle compartment, the improvement comprising:

actuating means for actuating said shifting means to effect change-over from a partial blowing operation for blowing said temperature-adjusted air toward at least one selected occupant to an overall blowing operation for blowing said temperature-adjusted air into the entire interior of said vehicle compartment, and vice versa; and

control means for controlling said acuating means to change the blowing of said temperature-adjusted air to said partial blowing operation when said compartment temperature sensed by said temperature sensor means is out of a range of stable air-conditioning temperatures.

4,364,514

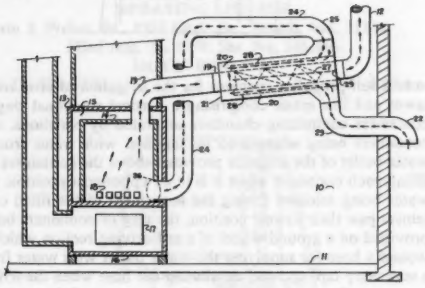
HEAT-RECOVERING APPARATUS FOR FURNACES

John R. Toporek, 13160 Rhode St., Cedar Lake, Ind. 46303

Continuation-in-part of Ser. No. 954,551, Oct. 25, 1978, abandoned. This application Jul. 1, 1980, Ser. No. 153,160

Int. Cl.³ F24B *7/00*

U.S. Cl. 237—55 **1 Claim**



1. In a hot air furnace for a dwelling unit a flue gas heat exchange device located within an exhaust gas discharge flue wherein said heat exchange device preheats combustion air that is directed to the combustion chamber of the hot air furnace wherein the improvement comprises:

a flue gas heat exchanger that comprises an extended inner duct that conveys the exhaust flue gases in heat exchange relationship with a jacketing chamber surrounding the inner duct, said inner duct having a one piece angular bent deflector strip that extends the length of the inner duct to retard the flow of exhaust flue gases and to enhance the heat exchange between the flue gases within the inner duct and the jacketing chamber, said jacketing chamber defined by a wall extending around the inner duct and having an air inlet and air outlet at a common end of the jacketing chamber, said air inlet is in communication with exterior air through a connecting duct that terminates on the under side of the jacketing chamber, said air discharge is in communication with the hot air furnace combustion chamber through a connecting duct that terminates on the top of the jacketing chamber above said jacketing chamber air inlet, within said jacketing chamber extending from the inner duct are pairs of radially mounted fins that extend longitudinally from the common end of the jacketing chamber but not touching the opposite end of the jacketing chamber, said jacketing chamber further containing two splitter fins that extend between the outer wall of the inner duct and the inner wall of the wall spaced from the outer wall of the inner duct to define an upper and lower jacketing chambers at the common end of the jacketed chamber, said splitter fins extending longitudinally within the jacketing chamber of the same length as said pairs of fins, said splitter fins defining an air flow path within the jacketing chamber where inlet air is directed to the lower jacketing chamber inlet, longitudinally down the lower jacketing chamber, up to the upper jacketing chamber longitudinally down the upper jacketing chamber and out the jacketing chamber air outlet.

4,364,515

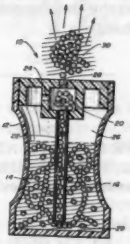
NON-PRESSURIZED DISPENSING SYSTEM AND COMPOSITION

Samuel B. Prussin, Big Sur, Calif., assignor to AE Development Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 29,630, Apr. 13, 1979, Pat. No. 4,278,206. This application Jun. 18, 1980, Ser. No. 160,673

Int. Cl.³ B05B *11/04*

U.S. Cl. 239—8 **32 Claims**



1. A method of dispensing a material onto a surface comprising the steps of: dispensing onto said surface a water-in-air suspension containing said material, said suspension comprising a liquid phase of small droplets of aqueous liquid stabilized with an interfacial barrier of very fine, hydrophobic metal oxide particles, said particles being suspended in an external air phase; imparting shear to said droplets whereby the barrier is at least partially destabilized and at least a portion of the droplets coalesce to form larger particles.

4,364,516

INJECTOR

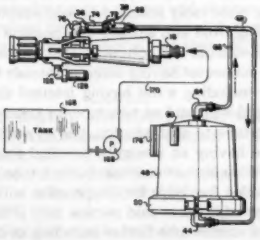
Edward J. Rhoades, Troy; Edwin C. Rosenberger, Piqua, and Jerome A. Waker, Casstown, all of Ohio, assignors to Chem-Lawn Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 112,883, Jan. 17, 1980, Pat. No. 4,315,600. This application Jul. 7, 1980, Ser. No. 166,513

The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.

Int. Cl.³ B05B *7/28*

U.S. Cl. 239—74 **20 Claims**



1. In combination with a spray gun including a handle and a muzzle and means for controlling the flow of a liquid through said muzzle, an injector comprising:

a main body portion,

a flow passage formed through said main body portion for accommodating the flow under pressure of a first liquid through said passage,

means mounting said main body portion on said gun with said passage communicating with said muzzle whereby said flow of said first liquid through said passage is controlled by said spray gun flow controlling means,

means for injecting a second liquid into said passage,

means for transmitting said pressure of said first liquid to said second liquid to pressurize said second liquid for injection into said passage,

valve means controlling injection of said second liquid into said passage,

valve actuating means for selectively actuating said valve means,

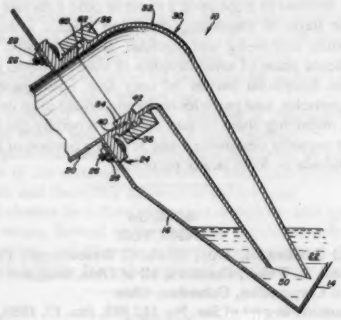
said spray gun flow controlling means and said valve actuating means being located adjacent each other and said handle and thereby simultaneously actuatable by a hand gripping said handle.

4,364,517

HOPPER CLEANER ATTACHMENT

Robert E. Etheridge, P.O. Box 5421, Greenville, Miss. 38701, and Philip L. Lewis, Rte. 1, Box 71-A, Glen Allan, Miss. 38744

Filed Jul. 11, 1980, Ser. No. 167,525
Int. Cl.³ B64D *1/18*
U.S. Cl. 239—171 **9 Claims**



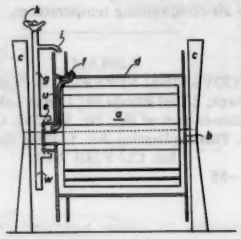
1. An aircraft crop spraying apparatus comprising a hopper having a bottom, an outlet opening formed in said hopper, an outlet tube connected to said outlet opening, said outlet opening being spaced above the bottom of said hopper, an adaptor fixedly mounted to said hopper over said outlet opening; a suction tube removably attached to said adaptor, said suction tube extending from said adaptor to a position adjacent to but slightly spaced from the bottom of said hopper, said adaptor including a connector having external threads formed thereon and further including a nut having internal threads, said nut being engaged with said suction tube for removably mounting said suction tube to said adaptor, one of said connector and suction tube having an inwardly bevelled free edge and the other of said connector and said suction tube having an outwardly bevelled free edge for cooperation with said inwardly bevelled free edge when said suction tube is mounted to said adaptor, said suction tube further including an external annular flange, said nut including an internal groove surrounding said flange for causing communication between said nut and said suction tube, said connector including an axially extending groove means, said suction tube including an axially extending key means fixed to such suction tube for insertion in said groove means to retain an inlet on the suction tube adjacent the bottom of the hopper to enable removal of material from that portion of the hopper below the outlet.

4,364,518

SELF-PROPELLED IRRIGATOR

Sven Gronlykke, Logismose Gods, 5683 Harby, Funen, Denmark

PCT No. PCT/DK79/00010, § 371 Date Nov. 22, 1979, § 102(e) Date Sep. 20, 1979, PCT Pub. No. WO79/00810, PCT Pub. Date Oct. 18, 1979
PCT Filed Mar. 21, 1979, Ser. No. 190,325
Claims priority, application Denmark, Mar. 22, 1978, 1321/78; Jun. 6, 1978, 2509/78
Int. Cl.³ B05B *3/18*
U.S. Cl. 239—191 **8 Claims**



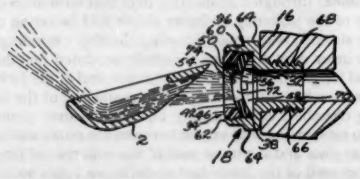
1. A self-propelled irrigator for the irrigation of crop rows, lawns and like areas, comprising a vertical rotational ring of containers comprising chambers separated by partitions, said containers being adapted to be supplied with water from a water-outlet of the irrigator provided above the containers for filling each container when it is in an uppermost position, the water being released during the movement of the filled containers past their lowest position, the ring of containers being provided on a ground wheel of a self-driving reel on which is wound a hose for supplying the water outlet with water from a stationary tap, said reel unwinding the hose when the irrigator moves forward, said wheel forming part of the reel and having a width corresponding substantially to the width of the reel and the reel comprising closed end bottoms provided with edge portions projecting radially outwards from a reel cylinder and forming wheels, at least one of said edge portions together with an additional radial flange defining a groove located under the water outlet, said groove communicating freely with the chambers of the wheel, the partitions of said chambers forming paddle blades extending from end bottom to end bottom in the reel.

4,364,519

NOZZLE ASSEMBLY FOR LOW PRESSURE IMPACT SPRINKLER

Jeffrey P. Kreitzberg, Walla Walla, Wash., assignor to Nelson Irrigation Corporation, Walla Walla, Wash.

Filed Jul. 14, 1981, Ser. No. 283,193
Int. Cl.³ B05B *3/16*
U.S. Cl. 239—230 **12 Claims**



1. A nozzle assembly for a water sprinkler comprising a generally flat member of wear resistant thermoset elastomeric material having an aperture in the central portion thereof constituting the stream defining orifice of the nozzle and

means for mounting said elastomeric member in a sprinkler in flow transmitting relation to a source of water under pressure communicated therewith including a rigid backing member having a central opening through which the stream defined by the nozzle orifice passes,

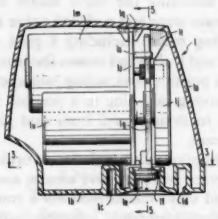
said backing member having surface means surrounding said opening and facing in a direction opposed to the direction of stream movement operable to engage and support said elastomeric member in a deformed operative condition in which first portions of said flat member defining diametrically opposed portions of the periphery of the aperture thereof are disposed in downstream spaced relation with respect to second portions thereof defining diametrically opposed portions of the periphery of the aperture thereof displaced 90° from said first portions so that the stream as it issues from the aperture of the flat member in said deformed condition tends to remain flattened in the direction of spacing of said first portions and to fan out in a desirable droplet size in the direction of spacing of said second portions.

4,364,520

PISTON PUMP ACTUATED DIAPHRAGM PUMP FOR SPRAYING LIQUIDS

Edwin J. Weber, Sr., 1903 Curie Dr., Severn, Md. 21144

Filed Aug. 26, 1970, Ser. No. 181,346
Int. Cl.³ B05B 9/04
U.S. Cl. 239—330 **8 Claims**



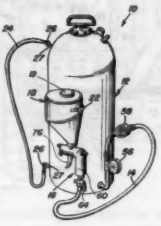
1. A piston pump actuated diaphragm pump for spraying liquids comprising, a container containing fluid to be dispensed, a closure mounted on said container, a neck portion provided on said closure, a diaphragm-pump spray nozzle assembly mounted within said closure neck portion and communicating with the fluid in the container to be dispensed, said diaphragm-pump spray nozzle assembly including a cylindrical housing having side and top walls, the upper surface of the top wall of said housing being concave, a diaphragm secured to the upper surface of the top wall to thereby form a chamber between the lower surface of the diaphragm and the concave surface of the housing top wall; and a motor actuated piston pump assembly detachably connected to said closure neck portion and separate from said diaphragm pump spray nozzle assembly, said piston pump assembly including a housing having a bottom wall, an annular recess formed in the bottom wall of said piston pump housing for receiving the neck portion of said closure, a bore provided in said bottom wall of said piston pump housing concentric with respect to said annular recess, a piston slidably mounted in said bore, the portion of the bottom wall of said piston pump housing within the neck portion of the closure being superimposed on said diaphragm, whereby upon actuation of the piston pump assembly the diaphragm-pump spray nozzle assembly dispenses fluid from the container while preventing the piston pump assembly from becoming contaminated by the fluid being dispensed; the motor actuated piston pump assembly being detachably connectable to other containers having similarly mounted diaphragm-pump spray nozzle assemblies, whereby various types of fluids, such as paint, air freshener, water, hair spray and the like can be successively dispensed.

4,364,521

TEXTURE APPLICATOR

James L. Stankowitz, 6946 Exline Rd., Jacksonville, Fla. 32222

Filed Aug. 1, 1980, Ser. No. 174,591
Int. Cl.³ B05B 9/02
U.S. Cl. 239—346 **10 Claims**



1. An apparatus for the application of a fluent material to a surface, said apparatus comprising, in combination:

an air pressure tank, inlet means on said pressure tank for filling said pressure tank from an external source of pressurized air, an outlet on said pressure tank for allowing pressurized air to be released therefrom;

a removable manually actuatable pump means disposed within said pressure tank for manually filling said pressure tank;

a supply tube attached to said outlet, said supply tube including a pressure regulator attached thereto for regulating the output pressure from the said pressure tank; and

an applicator gun having an inlet containing an on-off valve attached to said supply tube, a discharge tube extending longitudinally of said gun and having at an end a depending portion including an abutment surface, the depending portion connected by a flexible tube to said inlet, said discharge tube having at another end a free distal end with a nozzle connected thereto, means for displacing said supply tube longitudinally of said gun, a removable tip received in a recess disposed in said gun and being maintained therein by spring clip means attached to said gun and for pressing against said tip, said tip having a discharge orifice removably and engagably attached to said gun, said nozzle having a frusto-conical outer surface and said orifice of the removable tip having a complementary frusto-conical inner surface for receiving said frusto-conical outer surface of said nozzle, fluent material discharge chamber surrounding a portion of said free end of said discharge tube and having an open top communicating with a covered hopper, and a threadedly disposed stop means threadedly engaging and extending through a near wall of the gun for stopping rearward displacement of said discharge tube by contact against said abutment surface at a predetermined location thereof and at its closed location providing an interlock against said abutment surface.

4,364,522

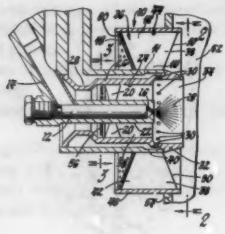
HIGH INTENSITY AIR BLAST FUEL NOZZLE

Samuel B. Reider, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 21, 1980, Ser. No. 170,682
Int. Cl.³ B05B 7/00
U.S. Cl. 239—399 **5 Claims**

1. In an air blast fuel nozzle including a cascade of swirler vanes defining a plurality of combustion air passages for directing a swirling flow of air to a combustion chamber and means in said fuel nozzle defining at least one fuel port for supplying an unburned source of fuel to said swirling flow of air, the improvement comprising, turbulence generator means located within the air flow through said combustion air passages and operative to produce an intensification of turbulence in said swirling flow of air immediately prior to mixing of said swirl-

ing flow of air with said unburned fuel source and to maintain said increased turbulence intensity without attenuation of the energy level in said swirling flow of air prior to mixing with said unburned fuel source thereby to cause reduction in fuel



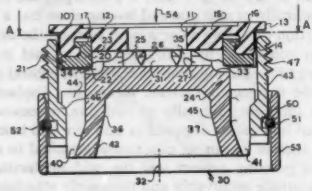
droplet size prior to burning of the fuel/air mixture so as to improve combustion efficiency by evaporation rate control attributable to the decreased fuel droplet size as produced by the turbulence intensification.

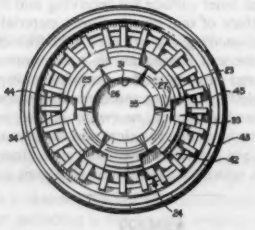
4,364,523

FLOW CONTROL TECHNIQUE

Richard G. Parkison, and Edward G. Hofstetter, Jr., both of Louisville, Ky., assignors to American Standard Inc., New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,886
Int. Cl.³ B05B *1/30*
U.S. Cl. 239—533.14 **3 Claims**





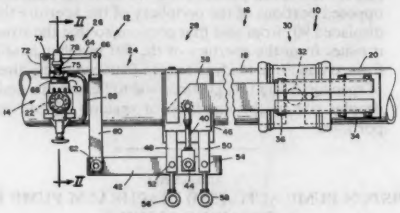
1. A flow control device for a nozzle comprising, a generally annular flexible control washer for insertion within the nozzle, said washer having a centrally disposed aperture, a washer retainer secured to said control washer, a spray body for at least partial insertion within the nozzle spaced from said flexible washer by means of said washer retainer, said spray body having a plurality of radially oriented channels formed in the surface thereof that is adjacent to said spray control washer, said channels each having spaced, parallel sides terminating in respective Vee-shape cross-sections, the widest portion of said Vee-shaped channels being oriented toward said control washer, said spray body having at least one recess formed in the periphery thereof in fluid communication with said channels in order to establish at least one axially directed conduit, said flexible washer being spaced from said channels by said washer retainer a distance that enables said washer to respond to said flow by pressing against and restricting the transverse area of said channels.

4,364,524

IRRIGATION CONTROL SYSTEM

Gail Cornelius, Portland, and Lloyd C. Olson, Beaverton, both of Oreg., assignors to R. M. Wade & Co., Portland, Oreg.

Filed Sep. 18, 1980, Ser. No. 188,588
Int. Cl.³ A01G *25/09*
U.S. Cl. 239—720 **11 Claims**



1. A control system for a fluid motor of an irrigation system comprising:

valve means for supplying fluid pressure to and blocking fluid pressure to the fluid motor;

means for actuating the valve means to provide an open valve means state and a closed valve means state;

said actuating means including a pilot valve including an aperture and a plug and means for selectively moving said plug to a position obstructing said aperture and for selectively moving said plug to a position removed from said aperture to drain liquid from said pilot valve and said valve means;

wherein said pilot valve includes an orifice located between said aperture and the valve means; and

wherein said valve means includes a continuous diaphragm and a control pressure chamber adjacent thereto and wherein said orifice and said control pressure chamber are placed in communication by a conduit which is external to said valve means.

4,364,525

BLADE ATTACHMENT FOR FOOD PROCESSOR

John W. McClean, 5 Beverly Crescent, Lakemba, New South Wales, Australia

Filed Jun. 6, 1980, Ser. No. 157,065
Int. Cl.³ B02C *23/00*
U.S. Cl. 241—92 **4 Claims**

1. A cutting blade assembly for a food processor comprising:

a tubular body;

a blade nonrotatably and axially fixed to said tubular body;

an annular flange keyed to but axially shiftable relative to said body and adapted to fit closely within a food processor container;

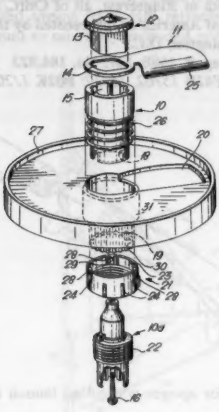
a spring seated against said body and said flange for urging said flange and said blade away from one another, said flange having an opening through which comminuted foodstuffs can pass to a portion of said container below said flange, said flange further being formed with a tubular boss;

a threaded ring engaging said boss and supporting said flange against the force of said spring;

a threaded sleeve engaging said ring connected to said body, said sleeve being provided with formations for mounting said assembly on a drive shaft of the food processor; and

detent means between said ring and said boss for enabling forced rotation of said ring relative to said boss and said sleeve, thereby permitting adjustment of the relative axial positions of said blade and said flange to permit continuous

adjustment of the thickness of slices produced by said assembly but preventing relative rotation of said ring and said



sleeve during rotation of said assembly in food comminuting operation of said assembly.

4,364,526

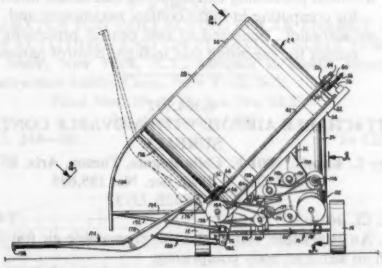
TUB CHOPPER

Allen A. White, Rte. 2, Box 9, Peabody, Kans. 66866

Filed Jan. 29, 1981, Ser. No. 229,347

Int. Cl.³ B02C *13/286*

U.S. Cl. 241—186.4 **29 Claims**



1. An improved tub chopper for comminuting material in the tub, the improvement comprising:

an open tub including a stationary, generally planar floor and an annular sidewall projecting upwardly from the floor to define a material receiving cavity over the floor and within the sidewall;

material chopping means within the cavity proximal the upper surface of the floor for comminuting material in the tub and supported on the floor;

means mounting the floor at an angle of inclination with respect to horizontal; and

means mounting the sidewall over the floor for rotation about an axis substantially normal to said inclined floor.

4,364,527

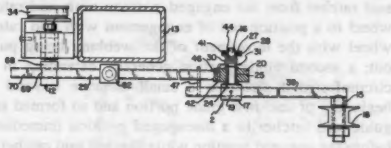
TENSION TAKE-UP AND SPEED CONTROL

Gerald R. Bruno, Paterson, N.J., assignor to Progressive Machine Company, Inc., Paterson, N.J.

Filed May 13, 1981, Ser. No. 264,001

Int. Cl.³ B65H *17/02, 25/02*

U.S. Cl. 242—75.51 **23 Claims**



1. Apparatus for controlling the tension and predetermined rate of movement of a continuous strip of elongated material being fed to or withdrawn from a processing station for processing at a predetermined processing rate, said apparatus comprising a first pivotable control arm having a first end and a second end, said first end of said first pivotable control arm being pivotable about a fixed pivot point, a second pivotable control arm having a first end and a second end, said first end of said second pivotable control arm being pivotably connected to said second end of said first pivotable control arm, and said second end of said second pivotable control arm being movable in response to variations in the difference between said predetermined processing rate and said predetermined rate of movement of said strip, biasing means interposed between said first and second pivotable control arms whereby upon pivoting of said second pivotable control arm about said second end of said first pivotable control arm said biasing means transmits only a portion of the movement of said second pivotable control arm to said first pivotable control arm, and speed control means for controlling said predetermined rate of movement of said strip in response to movement of said first pivotable control arm.

4,364,528

RETRACTOR FOR SEAT BELT PROVIDED WITH BUFFER MEANS AGAINST WEBBING TAKING UP FORCE

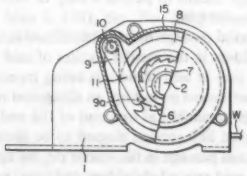
Hideo Yanagihara, Fujisawa, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Dec. 8, 1980, Ser. No. 214,094

Claims priority, application Japan, Dec. 13, 1979, 54/171623[U]; Jan. 30, 1980, 55/10088[U]; Mar. 21, 1980, 55/35771[U]

Int. Cl.³ A62B *35/00*; B65H *75/48*

U.S. Cl. 242—107.7 **8 Claims**



1. A retractor for seat belt provided with buffer means against webbing taking-up force comprising:

a webbing take-up shaft rotatably supported on a base member and biased in the webbing taking up direction;

a ratchet wheel mounted on said take-up shaft for rotation therewith and having engagement surfaces oriented in the webbing taking up direction;

a ratchet engageable with said ratchet wheel to prevent said take-up shaft from rotating in the webbing taking up direc-

tion and biased toward a position engaged with said ratchet wheel; and

a cam plate rotatable together with said take-up shaft and said ratchet wheel through frictional engagement therewith; and

said cam plate comprising a first guide portion generally extending in the circumferential direction through an angle of more than 360 degrees and so formed as to guide said ratchet from the engaged position with said ratchet wheel to a position out of engagement with said ratchet wheel with the movement of the webbing being pulled out; a second guide portion generally extending in the circumferential direction a small distance beyond the beginning of said first guide portion and so formed as to guide said ratchet to a disengaged position immediately before the engaged position while keeping said ratchet out of engagement with said ratchet wheel with the movement of the webbing being taken up and then hold said ratchet in said disengaged position; and a third guide portion extending from the end of said second guide portion to the beginning of said first guide portion and so formed as to guide said ratchet from said held position to said engaged position with the movement of the webbing being pulled out.

4,364,529

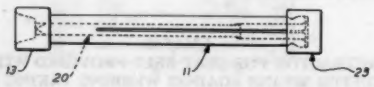
LEADER PIN

Robert M. Barto, Jr., Wyckoff, N.J.; Ira Lopata, New York, N.Y., and Bernard V. Emden, West Milford, N.J., assignors to Ragen Precision Industries, Inc., North Arlington, N.J.

Filed Feb. 12, 1981, Ser. No. 233,966

Int. Cl.³ G03B *1/04;* G11B *15/32*

U.S. Cl. 242—195 **4 Claims**



1. A leader pin comprising,

a. an elongated body having an external surface and an internal wall spaced from said external surface to define an axially extending passage means in the body, and an opening at one end of the body in communication with the axially extending passage means

b. said body having at least one axial slot extending from the end of the body having the opening and communicating between the external surface and the axially extending passage means to permit a loop of film to be inserted into the leader pin,

c. said axial passage means shaped and sized to define spaced shoulders in the medial section of said elongated body, at least one of said shoulders being tapered,

d. keeper means including, an elongated rod like section, and a knob assembly at one end of the rod like section,

e. said rod like section shaped to be slidably insertable into the axial passage in the leader pin for operative association with said spaced shoulders and sized so that in assembled position the axial passage means and the keeper means will hold and center the loop of film between said spaced shoulders in assembled position,

f. an annular locking channel formed on the body about the external surface thereof adjacent the open end,

g. said knob assembly having a resilient deflectable latch engageable and disgageable with the annular locking channel on the body for affirmatively locking the body and the keeper means in assembled position.

4,364,530

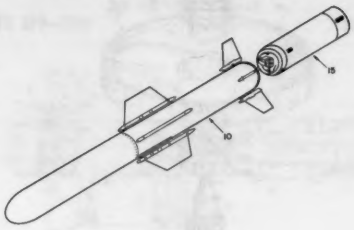
PROPULSION/CONTROL MODULAR BOOSTER

Michael J. Ripley-Lotee, China Lake; Robert B. Dillinger, and Keith E. Clark, both of Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 8, 1980, Ser. No. 184,823

Int. Cl.³ F42B *15/02, 15/12;* F02K *1/20*

U.S. Cl. 244—3.22 **1 Claim**



1. An apparatus for apogee-controlled launch of a guided missile comprising:

boost means for variably controlling said guided missile at launch having fore and aft ends with a thrust termination port in the aft end of said boost means;

clamping means for removably attaching said boost means' fore end to the aft end of said guided missile, said clamping means sequentially connected to said thrust termination port such that after said clamping means releases said thrust termination port is activated;

a rocket motor and propellant fixedly housed inside said boost means for providing thrust to said guided missile;

a pneumatically actuated jet vane thrust vector control unit made of copper-infiltrated tungsten positioned aft of said rocket motor and propellant and inside the aft end of said boost means for variably directing the rocket motor exhaust gases; and

a boost guidance unit mounted within said boost means for guiding said missile and comprises:

a sensor package with at least three rate gyroscopes for sensing any pitch, yaw, and/or roll;

a central processing unit inputting said sensor information for computing in-flight control parameters; and

an autopilot connected to said central processing unit's output for executing said in-flight control parameters.

4,364,531

ATTACHABLE AIRFOIL WITH MOVABLE CONTROL SURFACE

Jerry L. Knoski, 9001 E. Calle Bogota, Tucson, Ariz. 85715

Filed Oct. 9, 1980, Ser. No. 195,695

Int. Cl.³ F42B *13/32*

U.S. Cl. 244—3.27 **7 Claims**

1. An attachable, self contained, expandable air foil for use with an airborne body comprising:

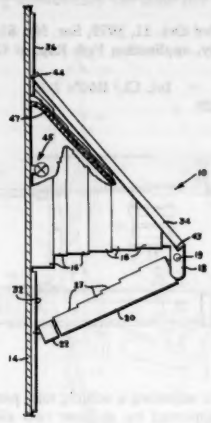
a longitudinally extending mount, said mount being capable of removable attachment to the outer surface of said airborne body;

means connected at one end thereof to said mount for expanding into an airfoil configuration, said airfoil configured means including a plurality of telescopic sections, each of said telescopic sections being of decreasing size in a transverse direction away from said longitudinally extending mount and capable of being nested within one another in a retracted position adjacent said mount and expandable from said mount to a fully extended position in said direction transverse to said longitudinally extending mount;

means operably connected between the other end of said airfoil configured means and said mount for providing a

movable control surface for said airfoil configured means in order to control the flight of said airborne vehicle;

means operably connected between said expandable airfoil configured means and said mount for extending said airfoil configured means from said retracted position adjacent said mount to said fully extended position; and



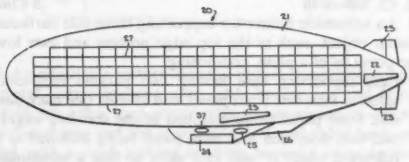
means operably connected to said movable control surface means for providing controlled movement of said control surface means relative to said airfoil configured means only when said airfoil configured means is in its fully extended position.

4,364,532

APPARATUS FOR COLLECTING SOLAR ENERGY AT HIGH ALTITUDES AND ON FLOATING STRUCTURES

Virgil Stark, New York, N.Y., assignor to North American Construction Utility Corp., New York, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,517
Int. Cl.³ B64B *1/00*
U.S. Cl. 244—30 **34 Claims**



1. An apparatus for collecting solar energy comprising a collector means including a plurality of photovoltaic cells;

at least one concentrator having a plurality of lenses disposed in spaced relation to said collector means;

means for positioning said collector means and said concentrator at high altitudes above the earth; and

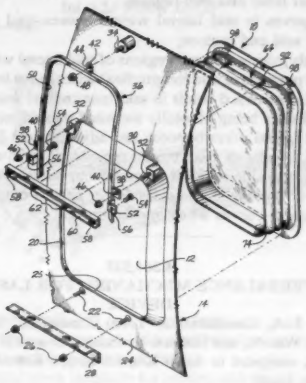
means for moving at least said lenses along a sinuous curved path independently of said photovoltaic cells and of said positioning means to track the sun.

4,364,533

SIDEWALL PANEL WINDOW ASSEMBLY AND METHOD OF INSTALLING

Arturu Pompei, Turin, Italy; John M. Raymond, Edmonds, and George D. Sherotsky, Redmond, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 13, 1980, Ser. No. 206,591
Int. Cl.³ B64C *1/14*
U.S. Cl. 244—129.3 **7 Claims**



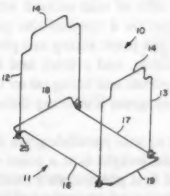
1. An aircraft window access assembly and mounting for rapid installation in and removal from an opening in an aircraft sidewall panel for providing viewing through and access to an aircraft window, with the assembly and mounting comprising: a window access assembly having a surface sized to make mating contact along the inside surface of a sidewall panel adjacent the perimeter of an opening in the sidewall panel, a reduced cross section of the assembly to extend outward and contact an aircraft window, a slideably mounted window shade to control viewing out the window, a dust stop located outboard from the shade, a pair of projections to extend outside the cross section of the assembly, a support member mounted to the outside surface of the sidewall panel and located to be contacted by the projections to pivot the assembly into and fill the opening in the sidewall panel, means for securing the positioned assembly to the sidewall panel, and means for supporting the window shade when it is in the opened position.

4,364,534

PLASTIC BAG STAND

Thomas M. Valesko, 3012 Orleans Rd., Seneca Castle, N.Y. 14547

Filed May 4, 1981, Ser. No. 259,992
Int. Cl.³ A63B *55/04*
U.S. Cl. 248—97 **7 Claims**



1. A plastic bag stand formed of wire to include a base and generally U-shaped sides pivotally mounted on said base to fold flat under said base for packaging and to open upright

above said base for supporting a plastic bag, said stand comprising:

a. a pair of opposed longitudinal wires having central spans spaced apart by less than the width of said sides;

b. a pair of oposed lateral wires having mid-regions arranged approximately in the plane of said central spans of said longitudinal wires;

c. end portions of said longitudinal wires being bent outward and downward to join said lateral wires;

d. end regions of said lateral wires being parallel with and offset from said mid-regions;

e. S-curves in said lateral wires between said mid-regions and said end regions;

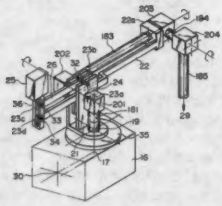
f. bonds joining said end regions of said lateral wires and said end portions of said longitudinal wires at the lower ends of said downward bends in said longitudinal wires; and

g. said sides being pivotally mounted on said end regions of said lateral wires between and adjacent said S-curves and said bonds so that upper regions of said sides detent against inside surfaces of said S-curves when folded and lower regions of said sides detent against outside surfaces of said S-curves when opened upright.

4,364,535
COUNTERBALANCE MECHANISM FOR LASER KNIFE DEVICE

Kiyoshi Itoh, Kamifukuoka; Tetuo Kamoshita, Toda; Teruo Sakai, Warabi, and Harumi Kawasaki, Oyaguchi kami, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1980, Ser. No. 167,959
Claims priority, application Japan, Jul. 18, 1979, 54/91437
Int. Cl.³ F16L *3/00*; A47G *29/00*
U.S. Cl. 248—123.1 **6 Claims**



1. A counterbalance mechanism for a laser knife device including a manipulator having first, second and third arms, comprising:

a base support arm which is rotatable around said first arm of said manipulator, said second arm of said manipulator extending through said base support arm and being supported thereby to be smoothly rotatable, said third arm extending outward from one side of an axis of said second arm and being substantially perpendicular to said axis;

a parallelogram link having four vertices, a first vertex being a point on the axis of said second arm, a second vertex being a link point on a vertical line passing through said first point, said link point acting as a pivotal coupling point to said support arm, and a third and fourth vertex being additional link points and being on an opposite side of said axis, said parallelogram link being deformable in a vertical plane;

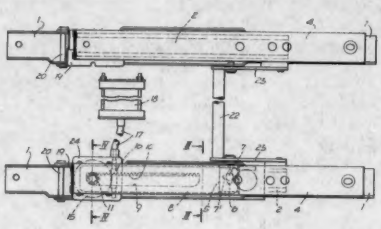
a weight coupled to said parallelogram link so that a center of gravity of said weight is at a point on an extended line connecting said first point with a center of gravity of the overall manipulator, said weight having a mass to balance a rotational moment of said manipulator; and

a second support arm supportng a third articulation of said manipulator, said second support arm being integral with said parallelogram link to cancel the rotational moment of said manipulator when said manipulator is operated.

4,364,536
DEVICE FOR ADJUSTING A VEHICLE SEAT

Bernd Klüting, Radevormwald, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,795
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 2844647
Int. Cl.³ B60N *1/08*
U.S. Cl. 248—429 **12 Claims**



1. A device for adjusting a vehicle seat, particularly a motor vehicle seat, supported by at least two slide tracks which extend along the length of the seat, and which are placed through guide tracks each spaced away from the vehicle floor by means of console elements, comprising:

at least one rack situated beneath one of said guide tracks and extending along the length of said guide tracks;

said rack being separate and distinct from said guide tracks and having one end connected by means of a connecting body with said slide track lying above it;

said rack having a long slot having a first long edge comprised of teeth forming said rack at at least some portion along its length and having a second long edge opposite said first long edge spaced away from said teeth;

a drive mechanism; and

a pinion connected between said drive mechanism and said long slot, wherein said pinion engages said teeth of said rack and is kept in engagement therewith by the spacing of said first and second long edges of said long slot.

4,364,537
ADJUSTABLE PLATE HOLDER

James A. Helzer, Cheyenne, Wyo., assignor to Unicover Corporation, Cheyenne, Wyo.

Filed Sep. 11, 1980, Ser. No. 186,320
Int. Cl.³ A47B *97/04*
U.S. Cl. 248—448 **3 Claims**

1. An adjustable holder for supporting three side surfaces of a planar object, such as the top edge portion and two lower edge portions of a plate, comprising:

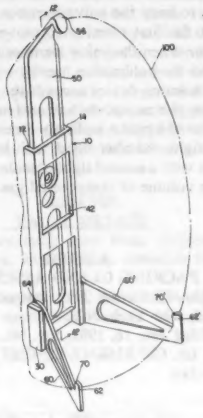
a rigid supporting base having two parallel longitudinal sides, at least one front panel, and at least one back panel, said front panel being attached at the forward edges of said two sides and said back panel being attached at the rearward edges of said two sides so that a substantially quadrilateral channel is provided along the longitudinal length of said base between said two sides, said front panel and said rear panel;

an elongate arm having a substantially quadrilateral cross-section so as to be frictionally received in the channel of said base, the upper portion of said arm being provided with a downwardly and forwardly projected hooked end;

a pair of feet extending forwardly and sidewardly of said base on either side of said base, each said foot having an upstanding toe at the outwardly extending end;

means to removably attach said pair of feet to the lower end of said base including a mounting bracket on each of said sides of said base, said mounting bracket having a key which is attached along a portion of a respective side which spaces a flange parallel to said sides; and

each said foot including a slot near the end opposite said toe, said slot being substantially the same size as said key and



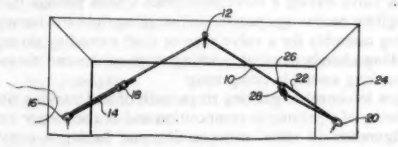
adapted to be received by said key, and a protrusion located above said slot on said foot, said protrusion fitting between said respective side and flange to reduce the play between said foot and said mounting bracket and such that a plate resting against said toes is locked in place by lowering said arm in the channel until said hooked end of said arm engages the top of the plate and said arm is then frictionally held in place.

4,364,538

ADJUSTABLE CABLE PICTURE-HANGING SYSTEM

James N. Tomlinson, 1114 Kathryn St., Boalsburg, Pa. 16827

Filed Jun. 19, 1980, Ser. No. 161,018
Int. Cl.³ A47G *1/24*
U.S. Cl. 248—495 10 Claims



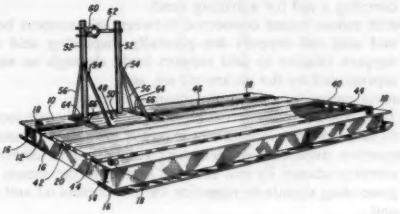
1. An adjustable picture-hanging system comprising a length of metal picture-hanging wire cable having one end portion formed into a first loop connectable to a mounting member on a picture frame and the opposite end of said cable being provided with a small locking aperture having a cross-sectional dimension only slightly greater than that of said cable and through which an intermediate portion of said cable extends and substantially fills said aperture to form an adjustable second loop for connection to another mounting member on a picture frame, the effective length of said cable between said mounting members being adjustable by moving said intermediate portion of said cable through said small locking aperture and then tensioning said cable between said mounting members, whereby said small locking aperture engages the cable portion passing therethrough and bends it a limited extent into an offset locking crimp in said cable operable to prevent slippage of said cable relative to said locking aperture in a direction to lengthen the same between said mounting members.

4,364,539

DIAMOND DRILL SKID PAD

Alcide Drysdale, Bathurst, Canada, assignor to Brunswick Mining and Smelting Corporation Limited, Bathurst, Canada

Filed Nov. 2, 1979, Ser. No. 90,753
Claims priority, application Canada, Nov. 23, 1978, 316788
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—647 5 Claims



1. A diamond drill skid pad comprising:

(a) at least two elongated skid members having relatively large ground engaging surfaces;

(b) structural cross members for joining said skid members in spaced parallel relation and also forming a storage space for drill rods between said skid members; and

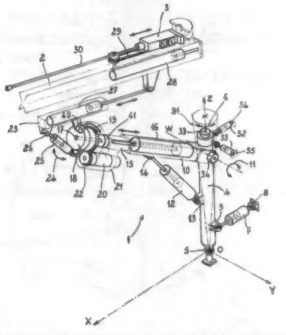
(c) an additional elongated skid member positioned in close relation to one of said elongated members so as to form a trackway for a drill stand on the upper surface of said skid pad.

4,364,540

SUPPORT-ARM ASSEMBLY FOR A DRILL OR BORER, PARTICULARLY FOR SUBTERRANEAN APPLICATIONS

Roger Montabert, Bron, France, assignor to Etablissements Montabert S.A., Saint-Priest, France

Filed Mar. 25, 1980, Ser. No. 133,829
Claims priority, application France, Mar. 26, 1979, 79 08169
Int. Cl.³ F16M *1/00*
U.S. Cl. 248—654 10 Claims



1. A drilling machine comprising:

a column mounted for rotation about a substantially upright first axis;

first motor means connected to said column for angularly displacing same about said first axis with an angular displacement represented by the parameter $\alpha 1$;

an arm pivotally connected to said column at a second axis substantially perpendicular to said first axis;

second motor means connected between said column and said arm for angularly displacing said arm about said second axis, the angularly displacement of said arm about said second axis being represented as a parameter $\alpha 2$;

an intermediate support body carried by said arm;

third motor means connected between said support body and said arm for rotating said support body about a third axis generally perpendicular to said second axis with the angular displacement of said support body being represented by a parameter $\alpha 3$;

a rail support pivotally mounted on said support body and carrying a rail for a drilling head;

fourth motor means connected between said support body and said rail support for pivotally displacing said rail support relative to said support body through an angle represented by the parameter $\alpha 4$; and

control means for said motor means including

at least one manual control element operatively connected to said first and second motor means for actuating same,

respective displacement detectors responsive to displacements produced by said first and second motor means for generating signals representing the parameters $\alpha 1$ and $\alpha 2$, and

follower means connected to said displacement detectors and responsive to the parameters $\alpha 1$ and $\alpha 2$ for establishing continuously the values of the parameters $\alpha 3$ and $\alpha 4$ defining the orientation of said rail to maintain the same parallel to itself, and automatically controlling said third and fourth motor means in response to the parameters $\alpha 3$ and $\alpha 4$ calculated in the follower means.

4,364,541

ISOLATING DEVICE FOR CALIBRATED SAFETY VALVE

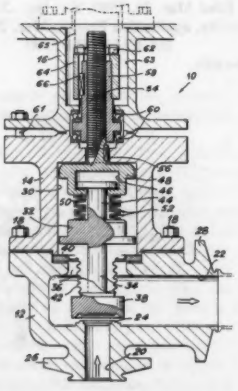
Jean Chabat-Courrede, 31 Rue du Docteur Emile Bergeron, 77250 - Moret-sur-Loing, and Francois Gemignani, 14 Lotissement du Pati, 13500 - Martigues, both of France

Filed Jul. 1, 1980, Ser. No. 164,908

Claims priority, application France, Apr. 2, 1980, 80 07459

Int. Cl.³ F16K *31/48*

U.S. Cl. 251—83 **3 Claims**



1. An isolating device for positioning in a circuit upstream of a safety valve, comprising a valve member which can sealingly bear on a valve seat formed in said circuit, neutralization means which normally maintain the valve member remote from its seat, said means being actuatable to bring the valve member in sealing engagement with its seat when it is necessary to isolate the safety valve and calibration means acting on the valve member when it is sealingly engaged with its seat to enable it to move away from the latter when the pressure upstream of the isolating device exceeds a predetermined value, said neutralization means comprising a mechanical system controlled by a motor, said mechanical system comprising a first member integral with the valve member and a second member which moves in accordance with the displacement direction of the valve member under the action of said motor, a connection with clearance being provided between said members in order to normally permit the second member to act on the first member so as to keep the valve member remote from its seat and to permit the first member to move with respect to the second member when the valve member moves away from its seat counter to the calibration means, when the pressure upstream of the isolating device exceeds the predetermined value after starting up the motor, each of said members comprising a part in the form of a piston sealingly received in a bore so as to define a first tight chamber filled with hydraulic fluid which communicates with a second tight chamber into which is introduced a given volume of compressed gas defining the calibration means.

4,364,542

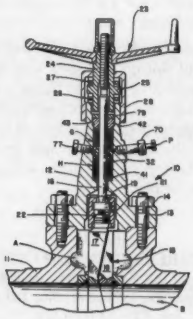
PACKING GLAND ASSEMBLY

Danny S. Meyer, Richmond, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jun. 18, 1981, Ser. No. 274,918

Int. Cl.³ F16K *41/02*; F16J *15/40*

U.S. Cl. 251—214 **8 Claims**



1. A valve having a valve body with a fluid passage therethrough for receiving a pressurized working fluid and having a packing assembly for a valve stem or shaft extending through a packing chamber having packing stops at the end thereof, said packing assembly comprising:

a first lower set of packing rings, each of said packing rings being of a polymeric composition and of the V-type configuration in radial cross-section and having a convex surface and a concave surface, said packing rings being arranged in an internested relationship in a stack about the valve stem in contacting relationship with the stem and bonnet;

a second upper set of packing rings, each of said packing rings in said upper set being of a polymeric composition and of the V-type configuration having a convex and a concave surface, said upper set of packing rings being arranged in an internested stacked relationship about the valve stem in contacting relationship with the stem and bonnet, said upper and lower sets of packing rings being disposed in said packing chamber with all their concave surfaces of the upper set of packing rings facing in the direction of fluid pressure from said flow passage;

a pair of anti-extrusion rings arranged about the valve stem at opposite ends of the stack of the lower set of packing rings to sandwich the packing rings of said lower set between said pair of anti-extrusion rings;

a third anti-extrusion ring arranged about the valve stem and disposed atop the stack of the upper set of packing rings;

a soft, plastic sealing material interjected under pressure into the packing chamber between said upper and lower sets of packing rings to pressurize and axially compress said packing assembly and thereby inducing a radial expansion of the packing rings to effect a tight, sealing relationship between the packing rings and said valve stem and bonnet, said anti-extrusion rings contactng the stem and bonnet with substantially zero clearance therewith and being formed of a non-metallic harder, more rigid substance than said packing rings and having a yield strength which exceeds the expected working pressure for the valve in the range of 25% to 50% and corresponds to the test pressure for the valve to permanently deform said anti-extrusion rings to impede extrusion of the packing rings along the stem and bonnet when said packing rings are subjected to axial compression and to provide for stem centralization.

4,364,543

VALVE DEVICE

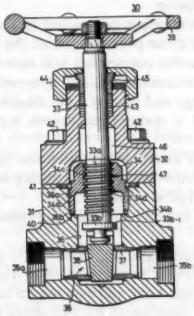
Masahiro Soya, Kawasaki; Isao Sato, Fujisawa, and Seiji Kurose, Yokohama, all of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Mar. 16, 1981, Ser. No. 244,393

Claims priority, application Japan, Mar. 19, 1980, 55-36875[U]

Int. Cl.³ F16K *31/50*

U.S. Cl. 251—221 **6 Claims**



1. A valve device comprising:

a valve body having an inflow passage and an outflow passage;

a valve seat fixed to the valve body at a position between said passages;

a valve element adapted to seat against and be separable from the valve seat;

a valve stem movable together with the valve element toward and away from the valve seat;

a stem holding member of a unitary construction secured at a portion thereof to the valve body in the body interior and holding the valve stem at a screw engagement part therewith, a surface at an extremity of said portion of the stem holding member being in abutting contact with a surface of the valve body thereby to form a first metal-contact seal;

a bonnet detachably fixed to the valve body and covering the remainder portion of the stem holding member, said valve stem being rotatable within said bonnet, a first sealing member interposed between said bonnet and said valve body, a second sealing member interposed between said bonnet and said valve stem; and

means for forming a second metal-contact seal between the stem and the stem holding member when the valve is in the fully opened state thereof.

4,364,544

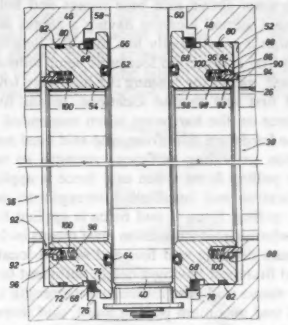
VALVE SEAT WITH SEDIMENT GUARD

Kee W. Kim, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

Filed May 18, 1981, Ser. No. 264,275

Int. Cl.³ F16K *3/00*

U.S. Cl. 251—328 **7 Claims**



1. A valve mechanism for controlling the flow of fluid, said valve mechanism comprising:

(a) a valve body structure defining a valve chamber and inlet and outlet flow passages intersecting said valve chamber, said valve body further defining annular seat recess means about said flow passages, said seat recess means defining radial surface means;

(b) a gate member being movably positioned within said valve chamber and being movable between open and closed positions to control the flow of fluid through said flow passages;

(c) means for imparting controlling movement to said gate member;

(d) annular seat means being movably retained within said seat recess means and having a sealing portion establishing sealing engagement with said gate member and a rear face portion opposing said radial surface means, said rear face portion being formed to define receptacle means;

(e) sediment guard means being movably positioned within said receptacle means; and

(f) urging means continuously maintaining said sediment guard means in contact with said radial surface means.

4,364,545

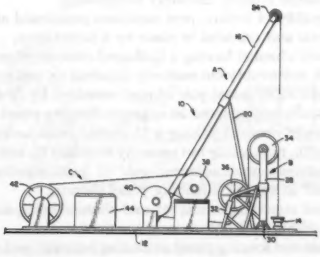
WELL SERVICING APPARATUS

Lee S. Kobylinski, Bartlesville, Okla., assignor to TRW Inc., Cleveland, Ohio

Filed Jul. 2, 1980, Ser. No. 164,519

Int. Cl.³ B66D *1/36*

U.S. Cl. 254—284 **1 Claim**



1. In combination with a well, a system for running well

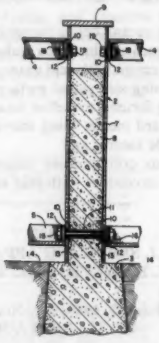
hardware into the well by cable or the like and pulling the hardware from the well, the system comprising a suspension structure including a base means, suspension mast means mounted on said base means, said mast means including means for suspending the hardware from a first location having a height above said base means which is greater than the height of the hardware, means for suspending the hardware from a second location above said base means and below said first location, said second location having a height above the base means which is substantially less than the height of the hardware, said first and second locations being substantially vertically aligned, means for running the hardware toward the well from said first and second locations, means for applying a pulling force on the hardware when suspended in a well for pulling the hardware therefrom, and said mast means having a construction providing sufficient strength to withstand the maximum pulling force when said force is applied from said second location and insufficient strength to withstand the maximum pulling force if said force is applied from said first location, wherein said suspension mast means includes first and second masts defining said first and second locations, respectively, said first mast having a height sufficient to suspend said hardware above said base means and a strength insufficient to withstand said maximum pulling force, said second mast having a height insufficient to suspend said hardware above said base means and a strength sufficient to withstand said maximum pulling force.

4,364,546

MODULAR FENCING ASSEMBLY

Oscar Lyman, 1290 San Tomas Aquino Rd., San Jose, Calif. 95117, and Ralph Tiegel, 1986 Eaton Ave., San Carlos, Calif. 94070

Filed May 2, 1980, Ser. No. 146,065
Int. Cl.³ E04M *17/16*
U.S. Cl. 256—24 **7 Claims**



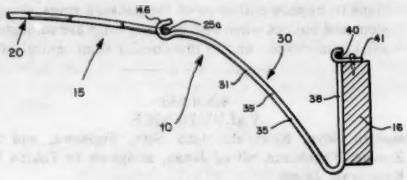
1. A modular fencing assembly comprising:
(a) a plurality of hollow post members positioned at spaced intervals and retained in place by a foundation;
(b) a lower channel having a U-shaped cross-section over its length, removably but securely attached to, and extending between an adjacent pair of post members by first attaching means, and adapted to engage a fencing panel therein;
(c) an upper channel having a U-shaped cross-section over its length, removably but securely attached to, and extending between said adjacent pair of post members, and adapted to engage a fencing panel therein;
(d) second attaching means for said channel being accessible from within said hollow post member;
(e) at least one fencing panel extending between and retained in position by the upper and the lower channels wherein said first attaching means is accessed by removing said panel from said lower channel.
(f) cap means located upon the top of said hollow post member.

4,364,547

SEAT BASE ASSEMBLY

Lawton H. Crosby, Lake Bluff, Ill., assignor to Morley Furniture Spring Corporation, Lake Bluff, Ill.

Continuation-in-part of Ser. No. 45,625, Jun. 5, 1979, abandoned, which is a division of Ser. No. 865,966, Dec. 30, 1977, Pat. No. 4,157,173. This application Oct. 7, 1980, Ser. No. 194,900
Int. Cl.³ F16F *3/02*
U.S. Cl. 267—110 **8 Claims**



1. In a seat base assembly including a frame having a front rail and a back rail and a seat base support means disposed between said rails, the improvement in a seat base support assembly, comprising:
(a) a seat base member connected to the front rail and extending into close proximity with the back rail;
(b) a rail connector connecting said member to the back rail;
(c) said rail connector having non-coil spring means for storing energy and having a rail attachment leg at one end thereof and a spring attachment leg at the other end thereof;
(d) said spring means being effective to resiliently oppose downward movement of said spring attachment leg relative to said rail attachment leg;
(e) said spring attachment leg being connected to said member;
(f) said rail attachment leg including a generally vertically arranged portion engaging one of the inside or outside surfaces of said back rail relative to said seat frame;
(g) said spring attachment leg extending upwardly from said rail attachment leg so as to connect to said member at a point substantially above said rail attachment leg.

4,364,548

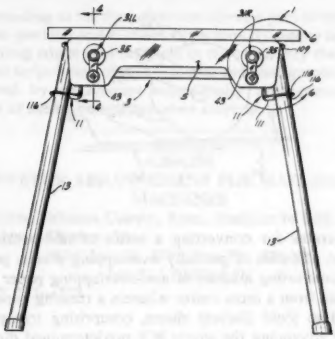
PORTABLE WORKBENCH

Curtis J. Eccardt, St. Charles, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 6, 1980, Ser. No. 194,611
Int. Cl.³ B25B *1/22*
U.S. Cl. 269—139 **18 Claims**

1. In a portable workbench comprising a frame, a plurality of legs supporting the frame, a pair of work holding table members carried by said frame, one of said table members being fixed relative to said frame and the other of the table members being movable toward and away from said fixed member, and a pair of vise screws carried by said frame and operatively coupled to said movable table member, said vise screws being operable independently of one another thereby to selectively move said movable table member toward and away from said fixed table member and, upon rotating of one of the vise screws an amount different from the other of the vise scews, to angularly move said movable table member relative to said fixed table member, wherein the improvement comprises: said frame including a front frame member, a back frame member, and a pair of hollow end frame members extending between said front and back frame members, each of said end frame mem-

bers having a longitudinal slot in the upper face thereof, each of said vise screws being disposed within a respective end frame member and being journalled relative to said front frame member, each of said end frame members having a guide movable axially therewithin, each said guide being threadably coupled with a respective vise screw so as to effect axial sliding movement of the guide within said end frame member upon rotation of said vise screw, a pair of support fittings engagable with the lower face of said movable table member, each of said support fittings being positioned to bear against the upper surface of a respective said end frame member, a pair of elongate slots in said movable table member, each said elongate slot extending in generally lateral direction with respect to said movable table member and being disposed proximate a respective end frame member, means extending through said slot in the upper face of said end frame members interconnecting said support fitting and said guide for the transfer of force from said vise screw to said movable table member, and a pin carried by



each said support fitting received in a respective said elongate slot in said movable table member for transmitting loads substantially in the direction of the longitudinal axes of said vise screws between said support fittings and said movable table member and for permitting said movable table member to move angularly with respect to said fixed table member upon rotating said vise screws different amounts, and means secured to said movable table member extending through said slots in the upper faces of said end frame members engagable with said end frame members for holding said movable table in a desired horizontal position, each said end frame member having inner and outer walls and guide surfaces spaced above and below said guide, said guide being an elongate member sized to be slidably received between said sidewalls of its respective end frame member and between said guide surfaces above and below said guide so as to be freely slidably movable substantially without lateral or vertical movement with respect to its end frame member.

4,364,549

APPARATUS FOR FEEDING CARDBOARD BLANKS OR THE LIKE TO A MAGAZINE

Werner Komossa, Börnsen, and Nils von Wichert, Glinde, both of Fed. Rep. of Germany, assignors to Hauni- Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

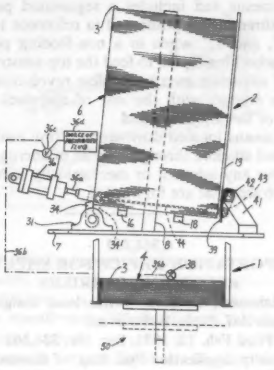
Filed Jan. 19, 1981, Ser. No. 226,503

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1980, 3001733

Int. Cl.³ B65H *3/24, 3/30, 1/30*

U.S. Cl. 271—1 **12 Claims**

1. Apparatus for supplying blanks of the type having marginal flaps alternating with recesses into the main magazine of a packing machine or the like, comprising an auxiliary magazine located above the main magazine and arranged to store a substantially upright pile of overlapping blanks each having oppositely opposed first and second sides; a plurality of supports located below the lowermost blank of the pile in said auxiliary magazine and normally disposed below the marginal flaps of such lowermost blank to thereby hold the pile against gravitational descent into the main magazine therebelow; displacing means operable to effect a relative movement between the pile in said auxiliary magazine and said supports so as to place the supports into register with the recesses of the pile whereby at least some blanks of the pile are free to descend into the main magazine by gravity, said displacing means including pusher means adjacent to one of the sides of said blanks, said pusher means arranged to move at least some blanks at the lower end of the pile in said auxiliary magazine between a first position in which the lowermost blank of the



pile rests on said supports and a second position in which said supports register with the recesses of said some blanks; intercepting means adjacent to the other side of the pile in said auxiliary magazine and arranged to prevent movement of those blanks of the pile not displaced by said pusher means; and means for coupling said intercepting means for movement with said pusher means so as to enable said intercepting means to move away from said other side of the pile when said pusher means shifts a number of blanks to move the recesses of such blanks into register with said supports and to move toward said other side of the pile when said pusher means thereupon reassumes a predetermined starting position in which it allows the lowermost blank of the remainder of the pile in said auxiliary magazine to rest its flaps on said supports.

4,364,550

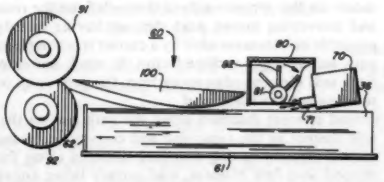
CORRUGATION VENTURI PAPER FEEDER

Frank R. Hynes, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 3, 1980, Ser. No. 193,557

Int. Cl.³ B65H *3/14, 3/06*

U.S. Cl. 271—11 **1 Claim**



1. A substrate feeder comprising in combination: support means for supporting a stack of substrates, said support means having front and rear ends;

restraining means connected to the front end of said support means such that movement of the substrates is inhibited;

air foil means having a flat top surface and a curvilinear bottom surface located adjacent said restraining means and above the front edge of the stack of substrates;

air nozzle means located adjacent the rear end of said support means for applying air pressure to said air foil means such that the leading edge of the top substrate in the stack is lifted above said restraining means and away from the stack and caused to conform to the shape of the air foil means without making positive contact along said curvilinear bottom surface of said air foil;

forwarding means for moving substrates away from the stack is located between said air foil means and said air nozzle means and includes a segmented paddle wheel having three blades positioned in reference to a circle at 315°, 0°, and 45° when in a non-feeding position, said paddle wheel is adapted to feed the top substrate from the stack of substrates every complete revolution and to not come in contact with the rest of the stack during the feeding of the top sheet; and

decurling means located downstream from said restraining means and adapted through a series of corrugation rollers to remove any inherent or mechanically induced curl in the substrates that are forwarded.

4,364,551

TRANSPORTATION DEVICE FOR SHEET-LIKE RECORDING CARRIERS

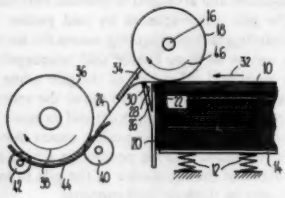
Thomas Rutishauser, Uerikon, Switzerland, assignor to Rutishauser Data AG, Stafa, Switzerland

Filed Feb. 12, 1981, Ser. No. 234,105

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1980, 3024036

Int. Cl.³ B65H *3/52*

U.S. Cl. 271—121 **9 Claims**



1. An apparatus having means for successively removing sheet-like recording carriers from a supply stack and for conveying the carriers into a predetermined path, means for biasing the stack so that the carrier at one end of the stack is urged into engagement with the removing and conveying means and stop means engageable with the forward edge of the supply stack relative to the path, the combination of means for assuring successive conveyance of the carriers one-by-one in the predetermined path, comprising:

a first element disposed along the path beyond the stop means on the opposite side of the path from the removing and conveying means, said element having an edge engageable and transversable by a carrier traveling along the path and having a surface facing the stack and extending from said element edge away from the path at an inclination toward the stack; and

a second element disposed along the path and on the same side thereof as the removing and conveying means, said second element having a surface disposed along the path beyond said first element, said surface being engageable by a carrier and inclined in the direction of movement thereof to deflect the carrier and hold it against said edge of said first element; whereby if two carriers are removed at once from the stack and traverse the stop means, the forward edge of the second carrier will abut said surface of said first element and be prevented from passing over said edge thereof by the first carrier until the latter becomes free from engagement with the removing and conveying means.

4,364,552

METHOD AND APPARATUS FOR FORMING A STREAM OF PARTIALLY OVERLAPPING PAPER SHEETS OR THE LIKE

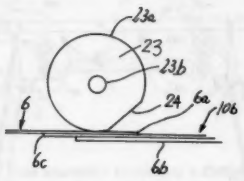
Alfred Besemann, Hamburg, Fed. Rep. of Germany, assignor to E.C.H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,677

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939277

Int. Cl.³ B65H *29/68*

U.S. Cl. 271—182 **7 Claims**



1. Apparatus for converting a series of non-overlapping sheets into a stream of partially overlapping sheets, particularly for converting a series of non-overlapping paper sheets which issue from a cross cutter wherein a running paper web is severed to yield discrete sheets, comprising transporting means for advancing the sheets in a predetermined direction along a predetermined path, said transporting means including first conveyor means for advancing the sheets of said series at a first speed along a first portion of said path wherein each sheet has a leading edge, an intermediate portion behind the respective leading edge and a trailing edge behind the respective intermediate portion, said transporting means further including second conveyor means for advancing the sheets of said stream at a lower second speed along a second portion of said path downstream of said first portion, as considered in said direction; and a braking roller having a generally cylindrical peripheral surface of substantially constant radius over an arc in excess of 180° and also including at least one flat portion on said surface which is adjacent to but out of braking engagement with the leading edge of each sheet entering said second portion of said path, wherein the entire cylindrical peripheral surface of said braking roller is adapted to engage and brake the intermediate portions of successive sheets of said series on entry into said second portion of said path to thereby decelerate such sheets from said first speed substantially to said second speed whereby each sheet which advances beyond said first portion of said path overlaps with the freshly decelerated sheet.

4,364,553

SHEET STACKING APPARATUS

Lionel A. Wilson, Redbourn, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 28, 1980, Ser. No. 201,676

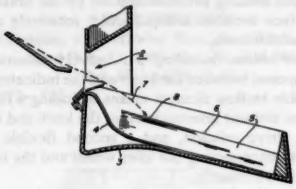
Claims priority, application United Kingdom, Oct. 31, 1979, 7937764

Int. Cl.³ B65H *31/10*

U.S. Cl. 271—219 **3 Claims**

1. A sheet stacking apparatus comprising a device for feeding sheets from an exit location onto the stationary base portion of a catch tray positioned below the exit location, said stationary base portion being substantially planar and being inclined

slightly downward away from said exit location and means for supporting sheets fed into the catch tray such that further sheets fed from the exit location will encounter substantially constant conditions, characterized in that the means for supporting sheets fed into the catch tray comprises a plurality of resilient strips secured by one end adjacent the exit location



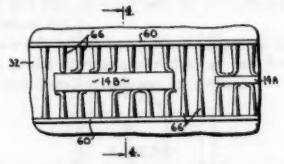
and extending in the feed direction above a part of said stationary base portion, and resilient strips directly supporting at least the trailing edges of sheets held in the catch tray thereon, said resilient strips being of such material and configuration as to be deflected by an amount substantially proportional to the weight of sheets being supported thereon.

4,364,554

CONVEYOR ARRANGEMENT FOR MAIL SORTING MACHINES

Roy Akers, Johnson County, Kans., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 26, 1981, Ser. No. 228,386
Int. Cl.³ B65H *5/02*
U.S. Cl. 271—272 **7 Claims**



1. In a mail sorting machine for handling both relatively wide and relatively narrow articles of mail with the mail articles transported on the machine in a substantially vertical orientation, a conveyor arrangement comprising:

a pair of endless belts each having a plurality of flexible fingers projecting outwardly therefrom, said fingers being spaced apart from one another across the width and along the length of each belt;

means for supporting said belts on the machine with confronting surfaces of the belts oriented in substantially parallel vertical planes spaced apart at least as far as the thickness of the wide mail articles to provide a conveyer path for the mail articles between said confronting surfaces of the belts, said support means locating the tips of the fingers on each confronting surface adjacent the tips of the fingers on the opposed confronting surface to engage with opposing fingers the opposite sides of the relatively narrow mail articles located between said confronting surfaces of the belts;

a stationary support surface on the machine underlying said confronting surfaces of the belts, said support surface being oriented substantially horizontally to receive the lower edge portion of each mail article travelling along said conveyer path; and

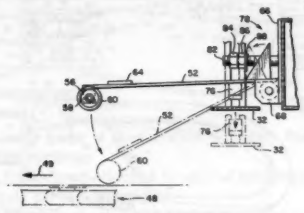
drive means for driving said belts to move said confronting surfaces in the same generally horizontal direction to convey the mail articles along said conveyor path in a substantially vertical orientation, said fingers being flexed against opposite sides of the mail articles to convey both the wide and narrow mail articles along said path with the lower edge portions of the mail articles moving along said support surface.

4,364,555

SHEET TRANSFER APPARATUS

Robert J. Wise, Eugene, Oreg., assignor to Georgia-Pacific Corporation, Atlanta, Ga.

Filed Nov. 14, 1980, Ser. No. 206,964
Int. Cl.³ B65H *29/32*
U.S. Cl. 271—308 **22 Claims**



1. A sheet transfer apparatus comprising:

a first station;

a second station;

means for transferring stiff sheets from said first station to said second station;

conveyor means for moving sheets in a first direction from said second station;

a portion of said transfer means being located adjacent said second station to hold a sheet above said conveyor means;

release means for releasing a sheet held by said transfer means at said second station from said transfer means to allow the released sheet to float downwardly to said conveyor means whereby the released sheet can subsequently be moved by said conveyor means;

hold-down means comprised of first and second bar members with contact surfaces for contacting the upper major surface of the released sheet during its entire downward floating motion, said first and second bar members extending in a second direction transverse to said first direction and across a major portion of the released sheet's dimension in said second direction, said first bar member being disposed adjacent a first end of the released sheet in said first direction and said second bar being disposed adjacent a second opposite end of the released sheet in said first direction.

4,364,556

EMERGENCY SHUT-OFF SWITCH AND FRAME ASSEMBLIES FOR EXERCISE APPARATUS

Gary Otte, Brazil, Ind., assignor to Nissen Corporation, Cedar Rapids, Iowa

Filed Oct. 20, 1980, Ser. No. 198,653
Int. Cl.³ A63B *23/06*
U.S. Cl. 272—69 **4 Claims**

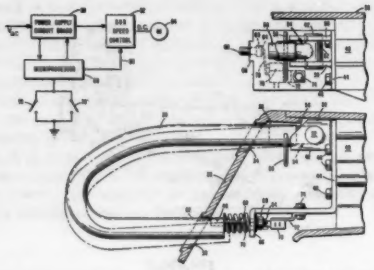
1. In an exercise machine of the treadmill type having a frame assembly, a housing assembly supported by the frame assembly, a motor positioned within said housing assembly, an endless belt driven by the motor and guided by the frame assembly, and manually operated switch means for controlling starting and stopping of the motor, the improvement comprising an emergency shut-off switch assembly for substantially instantaneously de-energizing the motor to thereby stop belt movement, said emergency shut-off switch assembly comprising:

first and second handles having upper and lower ends connectable to said housing assembly in such manner that said

handles are positioned to be grasped by a user of the exercise machine;

means for pivotally connecting each of the upper ends of said handles to said housing assembly;

means for connecting each of the lower ends of said handles to said housing assembly including spring-biasing means for biasing the lower ends of the handles away from the housing assembly and in such manner that each of the lower ends is independently movable towards said housing assembly when a force sufficient to overcome said spring-biasing means is applied thereto; and



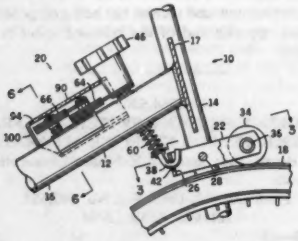
first independent switch means positioned in said housing assembly a predetermined distance from the lower end of said first handle and second independent switch means positioned in said housing assembly a predetermined distance from the lower end of said second handle, each of said first and second independent switch means being actuatable by the means for connecting the lower ends of said handles to the housing assembly by movement exceeding a predetermined amount of its associated handle lower end toward said housing for substantially instantaneously de-energizing the motor to thereby stop belt movement.

4,364,557

WORK CONTROL APPARATUS IN AN EXERCISER

Ronald A. Serati, St. Louis, Mo., assignor to The Perfection Manufacturing Company, St. Louis, Mo.

Filed Nov. 15, 1978, Ser. No. 960,765
Int. Cl.³ A63B *69/16*
U.S. Cl. 272—73 **1 Claim**



1. A work control apparatus in an exerciser having a frame, and a driven member rotatively mounted on the frame, the apparatus comprising:

(a) a brake means operatively mounted on the exerciser frame and engaging the driven member,

(b) a rotatively mounted knob connected to the brake means for selectively determining the braking pressure exerted on the driven member,

(c) a rotatively mounted indicator wheel,

(d) drive means between the knob and the indicator wheel including flexible endless element means interconnecting the knob and the indicator wheel in drive relation for rotating the indicator wheel an angular distance less than the corresponding angular distance of the knob upon rotation of the knob incident to adjusting the brake pressure,

(e) indicator means associated with the indicator wheel to indicate the braking pressure applied by the brake means to the driven member at a particular rotatively adjusted position of the knob,

(f) the drive means including a rotatively mounted idler wheel disposed between the knob and the indicator wheel,

(g) the flexible endless element means including a first flexible endless element interconnecting the knob and the idler wheel in drive relation, and a second flexible endless element interconnecting the idler wheel and the indicator wheel in drive relation,

(h) the idler wheel including an enlarged portion and a reduced portion,

(i) the first flexible endless element engaging the knob and the enlarged portion of the idler wheel, and the second flexible endless element engaging the reduced portion of the idler wheel and the indicator wheel, and

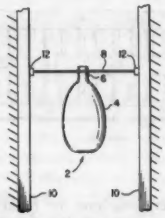
(j) the indicator wheel and the idler wheel being substantially identically formed but being reversely mounted relative to the exerciser frame.

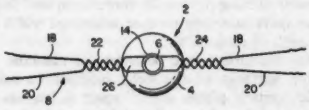
4,364,558

PUNCHING BAG APPARATUS AND SUPPORTING MEANS THEREFORE

Louis Aragona, 11 Scheiber Ter., Cedar Grove, N.J. 07009

Filed Mar. 31, 1981, Ser. No. 249,344
Int. Cl.³ A63B *69/22*
U.S. Cl. 272—78 **5 Claims**





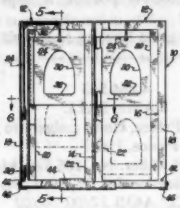
1. Punching bag apparatus and supporting means therefor, comprising:

a punching bag member having a body portion adapted for being struck by a user and a neck portion adapted for engaging a supporting member;

the supporting member including a pair of elongated wire-like members which are twisted at opposite ends so that said wire-like members are unitary, with the twistings on one end being in spaced relation with the twistings on the opposite end to form a centrally disposed resilient portion for engaging the neck portion of the punching bag member so that said member offers resistance when the body portion thereof is struck by the user and automatically snaps back to the rest position, said elongated wire-like members having portions extending in opposite directions from the centrally disposed resilient portion; and

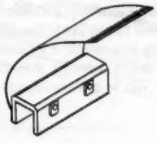
the portions of the supporting member extending in opposite directions from the centrally disposed resilient portion being adapted at their ends for being mounted on a supporting structure.

4,364,559
LEG EXERCISER
John B. Valentine, 4772 Hawley Blvd., San Diego, Calif. 92116
Filed Dec. 22, 1980, Ser. No. 218,546
Int. Cl.³ A63B *21/02*
U.S. Cl. 272—142 **3 Claims**



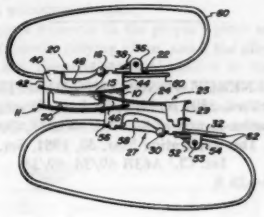
1. A portable leg exerciser comprising:
(a) a frame having two sub-frames each defining parallel tracks;
(b) two foot pieces engageable by the left and right feet respectively and slideable in said respective sub-frames;
(c) resistance means reacting against the sliding of said foot pieces in said sub-frames in at least one direction whereby the feet and legs are exercised by overcoming said resistance means; and,
(d) said two sub-frames being hinged together along an axis parallel to the direction of sliding of said foot pieces to permit said frame to collapse for storage.

4,364,560
HOCKEY STICK PRACTICE WEIGHT
John F. Gemmel, 59 Maryland St., Winnipeg, Manitoba, Canada (R3G 1K6)
Filed Nov. 4, 1981, Ser. No. 317,796
Claims priority, application Canada, Oct. 4, 1978, 312664
Int. Cl.³ A63B *21/00, 59/12, 69/00*
U.S. Cl. 273—1 B **4 Claims**



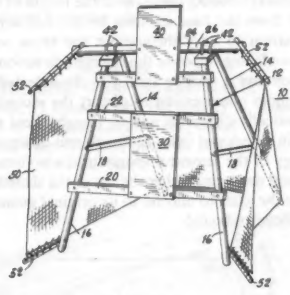
1. A practice weight for hockey stick handles, said handles being substantially rectangular in cross section and including upper and lower edge faces and a pair of side faces; comprising a U-shaped weight engageable on said handle, means on said weight for detachably securing said weight on said handle in the desired location therealong, and a flexible cover means secured by one end thereof to said weight to wrap around said weight when secured to said stick in order to cover said weight, and means to secure the other end of said cover means to itself when wrapped around said weight.

4,364,561
PARTY GAME
Robert E. Gill, 401 Liberty Blvd., Phillipsburg, N.J. 08865
Filed Jan. 4, 1982, Ser. No. 337,022
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—1 G **5 Claims**



1. A party game in combination with two flat topped belt buckles comprising:
(a) a female part attached to one of said buckle tops, said female part comprising:
(i) a tongue receiving tunnel having opposed U-shaped side slots; and
(ii) a double headed marker pin movably retained in and spanning said slots;
(b) a male part comprising a cantilevered tongue attached to said second buckle top in overlying spaced-apart registration, said male tongue part and said female tunnel being positioned in their respective buckle tops so that said tongue edge faces said tunnel opening; whereby,
when said male tongue part is inserted into said female tunnel, said tongue can urge said marker pin forward from one slot end to the other.

4,364,562
BASEBALL REBOUND TARGET
John M. White, 25 Vernon St., Hyde Park, Mass. 02136, and George Owen, Jr., 23 Robbins St., Milton, Mass. 02186
Filed Apr. 17, 1980, Ser. No. 141,049
Int. Cl.³ A63B *69/40*
U.S. Cl. 273—26 A **9 Claims**



1. A baseball rebound device useful in improving throwing accuracy which comprises:
a frame structure including a top cross-bar;
a pair of legs movably attached substantially at each end of said cross-bar, each pair of said legs forming an inverted v;
a pair of front legs defined by one leg of each said pair of legs and a pair of rear legs defined by the other leg of each said pair of legs, said front and rear legs being adjustable relative to each other,

a plurality of horizontal cross-bars rigidly attached to the front legs; and

a laminated, impact-resistant planar target board having substantially the same length and width as a normal baseball strike zone rigidly attached to the horizontal cross-bars at a location which corresponds to the location of a normal strike zone of an opposing baseball batter.

4,364,563

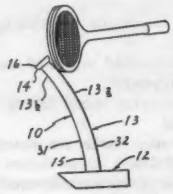
ENERGY DISSIPATING BALL TEE

David F. Stafford, 3504 N. Dale, Spokane, Wash. 99206

Continuation-in-part of Ser. No. 947,951, Oct. 2, 1978, abandoned. This application Mar. 30, 1981, Ser. No. 248,974

Int. Cl.³ A63B *69/36, 69/38*

U.S. Cl. 273—26 R **17 Claims**



1. An energy dissipating ball tee for supporting a ball at a prescribed elevation to be struck at by a swinging bat moving in a selected direction, comprising:

a base member;

an elongated shaft mounted to the base member and projecting therefrom to an outward end;

a ball support integral with the shaft and formed at the outward end of the shaft;

said elongated shaft being formed of a self-supporting low density synthetic closed cell foam material of a defined volume having a homogeneous closed cellular cross section extending along the elongated shaft that serves as a critically damped inelastic energy-absorbing oscillator when the shaft is struck by the swinging bat moving in the selected direction with the shaft nondestructively progressively bending throughout the length of the elongated shaft from the base member to the ball support causing cell strain to vary throughout the cross section with a surface facing opposite the selected direction in maximum tension and a surface facing in the selected direction in maximum compression to distort the closed cells and to inelastically compress and to thereby heat air entrapped within the closed cells to absorb and dissipate the kinetic energy of the impact throughout the volume of the shaft without damaging either the bat or the shaft and to further cause the shaft to unbend to its original geometry without significant rebound.

4,364,564

SHOCK ABSORBER FOR TENNIS PLAYERS

David Lewis, 29 Hudson Ave., Waldwick, N.J. 07463

Filed Dec. 10, 1979, Ser. No. 102,038

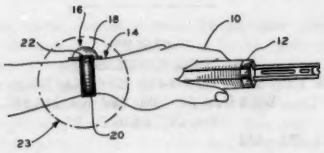
Int. Cl.³ A63B *61/00*

U.S. Cl. 273—29 R **8 Claims**

1. A shock absorber for reducing the physiological effects on the arm or shoulder associated with the contact of a ball or the like with an instrument held by the hand, comprising:

(a) a hollow housing;

(b) approximately 0.13 cubic inches of liquid mercury disposed in the hollow portion of said housing, where the



volume of said hollow portion is approximately 0.39 inches; and

(c) means of securing the housing to the player's arm.

4,364,565

GAME BALL

Julius Tomar, Port-au-Prince, Haiti, assignor to Home of Champions, S.A., Port-au-Prince, Haiti

Continuation-in-part of Ser. No. 266,326, May 22, 1981, abandoned. This application Jul. 31, 1981, Ser. No. 287,471

Int. Cl.³ A63B *37/00, 37/02*

U.S. Cl. 273—60 R **5 Claims**

1. In a game ball comprised of a spherical core and a cover, the improvement wherein said core is comprised of a partially blown single spherical mass of at least 10 percent by weight of a copolymer of ethylene and at least one unsaturated monocarboxylic acid having from 3 to 8 carbon atoms, said copolymer containing up to 30 percent by weight of said acid copolymerized therein with foam at the center of said core and having a skin with a density substantially equal to the density of said copolymer, said copolymer being crosslinked with thermolabile crosslinkages.

4,364,566

GAME APPARATUS WITH TOY VEHICLES

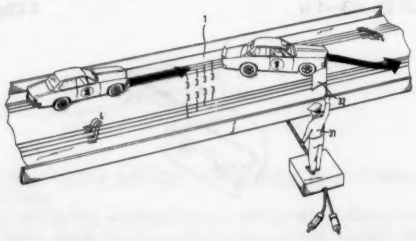
Hermann Neuhierl, Waldstrasse 36, D-851 Fürth/Bayern, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,027

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939703

Int. Cl.³ A63F *9/14*

U.S. Cl. 273—86 B **24 Claims**



1. In a game apparatus with toy vehicles adapted to run on a track, said vehicles being electrically identified with contact segments being located in said track and bridging contacts being provided on said vehicles whereby electrical contact with said contact segments is made the improvement comprising: at least one pair of said contact segments being arranged pair-wise so that upon the passage of a vehicle over the first contact segment there is generated a starting impulse and upon the passage of the said vehicle over the second contact segment there is generated a stop impulse; a start-stop generator means associated with each said pair of contact segments to

receive both said start and stop impulses therefrom and said generator emitting an impulse the length of which corresponds to a time interval between said start and stop impulses; at least one time comparator stage being connected to the output of said start-stop generator means and said comparator emitting an output impulse if the length of the impulse received from said start-stop generator means exceeds a predetermined length as set by a desired game variant, and a counter means receiving said output from said time comparator stage.

4,364,567

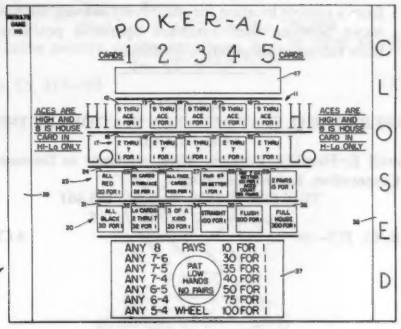
POKER-KENO GAME

Joseph Goott, Great Falls, Mont., assignor to Tropic Industries, Inc., Great Falls, Mont.

Continuation-in-part of Ser. No. 15,151, Feb. 26, 1979, abandoned, which is a continuation of Ser. No. 808,954, Jun. 22, 1977, abandoned. This application May 30, 1979, Ser. No. 43,678

Int. Cl.³ A63F *5/00*; A63B *71/00*

U.S. Cl. 273—237 **30 Claims**


POKER-ALL
CARDS 1 2 3 4 5 CARDS
CLOSED
ACES ARE HIGH AND 8 IS HOUSE CARD IN HI-LO ONLY
ACES ARE HIGH AND 8 IS HOUSE CARD IN HI-LO ONLY
ANY 8 PAYS 10 FOR 1
ANY 7-6 30 FOR 1
ANY 7-5 35 FOR 1
ANY 7-4 40 FOR 1
ANY 6-5 50 FOR 1
ANY 6-4 75 FOR 1
ANY 5-4 WHEEL 100 FOR 1
PAT LOW HANDS NO PAIRS

12. A game based on the card game of poker but playable by one person or more than one person by guessing values of one or more cards in a poker hand and/or predetermined combinations of two or more cards as occur in a poker hand in varying probabilities, comprising at least one game display, which is to be used by the one person or the more than one persons during a game, having means associated therewith for designating on the surface a first plurality of positions corresponding to the value of each card in a poker hand and a second plurality of positions corresponding to predetermined combinations of two or more cards in a poker hand; means for randomly selecting a poker hand; and means for showing the value of each card in the randomly selected poker hand on said first plurality of positions and any predetermined combinations of two or more cards as occur in randomly selected poker hand on said second plurality of positions, whereby a player can guess values of one or more cards in the randomly selected poker hand and/or one or more predetermined combinations of two or more cards in the poker hand.

4,364,568

METHOD OF PLAYING A STRATEGY GAME

George T. Tracy, 1515 S. Park Dr., Santa Ana, Calif. 92707

Filed May 5, 1980, Ser. No. 146,483

Int. Cl.³ A63F *3/00, 3/02*

U.S. Cl. 273—242 **17 Claims**

1. A method of play of a strategy board game wherein each player moves his playing pieces, each piece having one of a number of distinct codes, one code being designated a neutral code, about a pattern of playing spaces, each space also having one of those codes, including said neutral code, in an attempt to capture the playing pieces of his opponent, the method of play comprising the steps of:

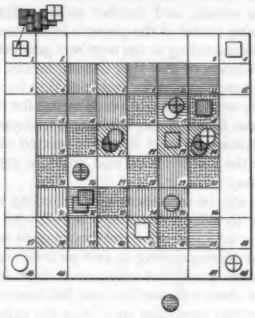
(a) each player receiving an identical set of coded playing pieces;

(b) each player placing his playing pieces on one or more designated starting spaces;

(c) each player, then, in alternating turns, moving one of his playing pieces, as follows:

(i) in any direction from its initial location on a designated starting space, or its other subsequent location, to any adjacent, unoccupied space;

(ii) if any space adjacent to the player's piece is occupied by an opponent's playing piece, and if the playing space directly and linearly behind (relative to the player's piece) the playing space occupied by the opponent's playing piece is unoccupied and is coded similarly to that of the player's playing piece, or if either the player's piece or said space is of the neutral code, then capturing the opponent's playing piece by linearly jumping that piece into the unoccupied playing space behind it and removing the opponent's piece from the board;



(iii) if any space adjacent to the player's piece is occupied by an opponent's playing piece, and if that adjacent space is coded similarly to that of the player's playing piece, or if either the player's piece or the adjacent space is of the neutral code, then capturing the opponent's playing piece by bumping onto that playing space and removing the opponent's playing piece from the board;

(d) continuing in this manner until one player captures, either by jumping or bumping, a predetermined number of the other player's playing pieces.

4,364,569

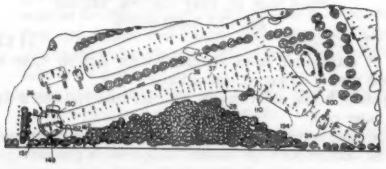
SIMULATED GOLF BOARD GAME

Ronald A. Duwell, 17 Chester Dr., and Jeffery A. Sabotka, 28 Ellis St., both of Windsor Locks, Conn. 06096

Filed May 15, 1980, Ser. No. 150,177

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—245 **30 Claims**



1. A parlor game for participation by one or more players closely simulating the outdoor game of golf comprising:

a game board presented as a miniature, in plan view, of a

full-scale golf course including appropriate pictorial representations of a tee; a green distant from said tee; a fairway generally extending between said tee and said green; a plurality of troubles positioned on said fairway, adjacent to said fairway, and distant from said fairway; and distance indicia at preselected intervals along said fairway to denote distance from said green; at least one ball marker, representing

a player's ball, adapted to be moved manually and positioned on said game board;

first chance means for manipulation by a player for randomly generating numbers having two digits, the first of the digits being equal to or greater than the second of the digits;

a first source of information including separate sets of number indicia thereon relating to each of a plurality of clubs arbitrarily chosen by a player prior to manipulation of said chance means, said number indicia of each of said sets signifying travel of the player's ball when using a particular club according to the numbers generated in response to manipulation of said first chance means;

second chance means for manipulation by a player simultaneously with said first chance means for randomly indicating, from time to time, whether the player's ball following manipulation of said first and second chance means but before the ball lands on said green, is subject to a trouble situation;

a second source of information including trouble condition indicia to which the player's ball may be subjected at preselected intervals corresponding to said distance indicia and corresponding to said pictorial representations on said game board and responsive to an indication by said second chance means that said ball marker of the player is in a trouble condition signifying the extent of the trouble condition to which the player's ball is subjected upon manipulation of said first and second chance means;

third chance means for manipulation by a player for randomly generating numbers having one digit, one of said sets of number indicia of said first source of information relating to a driver club being in the form of a driver matrix, said number indicia of said driver matrix signifying travel of the player's ball according to a combination of the numbers generated in response to simultaneous manipulation of said first chance means and of said third chance means, said driver matrix including a plurality of columns and a plurality of rows, each of said columns having a heading number capable of being generated by manipulation of said third chance means and each of said rows having an identification number capable of being generated in response to manipulation of said first chance means, an intersection of said row and of said column defined, respectively, by said identification numbers and said heading numbers generated in response to manipulation of said first and third chance means resulting in designation of a specific one of said number indicia signifying travel of the player's ball.

4,364,570

ROPING TRAINING AID

Delbert W. Hallam, Rte. 1, Box 42, Evans, Wash. 99136

Filed Mar. 27, 1981, Ser. No. 248,565

Int. Cl.³ A63B *69/00*

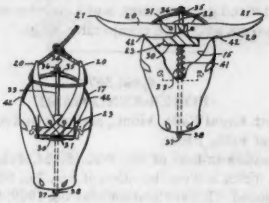
U.S. Cl. 273—338 **11 Claims**

1. A retractable horn attachment for hollow steer head-shaped roping dummies, comprising:

a pair of horns, each having an inner base end and a remote outer end;

a carriage pivotally mounting the horns at their base ends for movement between horizontal oppositely projecting operative positions and substantially vertical inoperative positions;

guide means movably mounting the carriage and adapted to be mounted within a hollow steer head-shaped roping dummy for movement of the carriage between an extended position corresponding to the operative horn positions wherein the horns are extended from the hollow steer head-shaped roping dummy, and a retracted position corresponding to the inoperative horn positions wherein the horns are retracted into the hollow roping dummy; and



actuator means connected with the carriage and operable from a remote location for selectively causing the horns to move between their extended operative positions and their retracted inoperative positions.

4,364,571

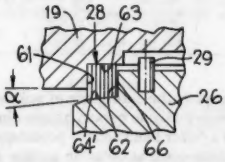
TAPERED SEAL SEAT BETWEEN STATIONARY INSERT AND GLAND

Lowell E. Hershey, Portage, Mich., assignor to Durametallic Corporation, Kalamazoo, Mich.

Filed Oct. 9, 1980, Ser. No. 195,461

Int. Cl.³ F16J *15/38, 15/36*

U.S. Cl. 277—86 **4 Claims**



1. In a bellows-type mechanical seal construction for use between a wall and a shaft extending therethrough and rotatable relative thereto, wherein said mechanical seal construction has first and second annular sealing members which surround the shaft and have mutually contacting sealing faces, said first sealing member being nonrotatably fixed with respect to the wall, the second sealing member being nonrotatably fixed and axially slidable relative to the shaft, a collar fixed to the shaft, metal bellows means sealingly connected between the collar and said second sealing member for resiliently urging the second sealing member axially into engagement with said first sealing member, a gland ring fixed to the wall in surrounding relationship to the shaft, the first annular sealing member being nonrotatably fixed relative to the gland ring, the gland ring and the first sealing member defining thereon a first pair of opposed end faces which are axially spaced apart and a second pair of opposed peripheral faces which are radially spaced apart, whereby said first and second pairs of opposed faces define an annular recess therebetween, and an annular packing disposed within said recess for creating a sealed relationship between the gland ring and the first sealing member, said annular packing being of an axially laminated graphite construction, said bellows means resiliently urging the first sealing member axially relative to the gland ring in a selected direction whereby the opposed axially-spaced end faces thereon tend to move toward one another, comprising the improvement wherein the opposed radially-spaced peripheral faces which define said second pair are disposed in nonparallel relationship

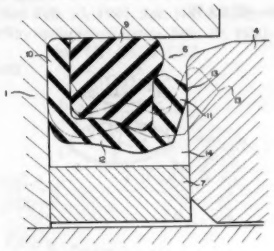
and define a slope therebetween in the range of from 2° to 5° so that said peripheral faces diverge with respect to one another as they project axially in said selected direction, said annular packing having one of its axial end faces directed toward but slightly axially spaced from one of said end faces so as to define an annular clearance gap therebetween which is of small axial dimension, said clearance gap being located at the axial end of said annular recess which is of minimum radial spacing between the pair of opposed peripheral faces, and said bellows means causing said packing to be axially urged toward said one axial end face and radially compressed between said opposed radially-spaced peripheral faces due to the relative convergence between these latter faces in response to the urging of said first sealing member in said selected direction relative to said gland ring.

4,364,572

SEAL ASSEMBLY WITH LOAD RING

Teiji Yamamoto, Kadoma, and Tsukasa Yamazaki, Hirakata, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Apr. 3, 1981, Ser. No. 250,598
Claims priority, application Japan, Sep. 10, 1979, 54-123919
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—92 **1 Claim**



1. A seal assembly comprising:

first and second axially spaced members mounted for relative rotation about a common axis, said first member having a counterbore formed in one face thereof, said second member having an end face opposite the counterbore;

a third member disposed between said first and second members;

a seal ring of tough abrasion-resistant material having a W-shaped cross-section in an unloaded condition disposed within the counterbore with the W-shaped cross-section defining an annular groove facing the side wall of the counterbore, said seal ring including a driving flange engaged in non-rotative driving contact with the side wall and an end wall of the counterbore at the juncture of these walls, a sealing flange adapted to be engaged in annular lip sealing rotative contact with the end face of said second member and a bight portion interconnecting said driving and sealing flanges, the thickness of the driving flange and the bight portion being made substantially same and the thickness of the sealing flange being made thicker than that of the driving flange and the bight portion; and

a load ring of elastmeric material having substantial spring response characteristics, said load ring being disposed within the annular groove of the W-shaped seal ring and engaging substantially the entire inner wall surface of the sealing flange and being axially compressed between the driving flange and the sealing flange;

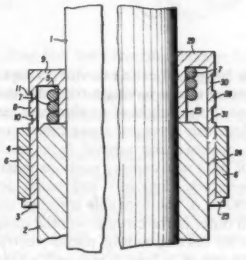
wherein said seal ring is compressed between said first and second members when loaded in place and the shape of cross-section is transformed from W-shape to C-shape having a substantially straight bight portion interconnecting the flanges with keeping a spacing between the bight portion of said seal ring and said third member.

4,364,573

GASKET SEAL FOR A SLIDING ROD IN A GUIDE BUSH

Guy Gautier, Montfort-L'Amaury, and Regis Bondiguet, Rueil Malmaison, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jun. 13, 1980, Ser. No. 159,306
Claims priority, application France, Jun. 27, 1979, 79 16542
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—153 **1 Claim**



1. A homogenous gasket seal for the passage of a valve shaft through a valve guide for an internal combustion engine comprising:

first rigid seal means disposed over the outer distal end portion of said valve guide;

second rigid seal means coaxial and integral with said first seal means so as to form a one-piece homogenous seal and closely fitted around and in direct axial contact with said valve shaft for the sealing thereof, said second seal means having a radial end surface portion formed on a first axial end portion thereof and being in engaging contact with a radial end surface portion of said distal end portion of said valve guide;

flexible connecting extension means for providing alignment flexibility between said first and said second seal means and extending from a first end portion of said first seal means and having an axial length substantially equal to the axial length of said second seal means, said extension means having at least one external circumferential groove formed in an outer surface portion thereof;

a first radial flange integrally connecting a second end portion of said first seal means opposite said first end portion of said first seal means with a second axial end portion of said second seal means opposite said radial end surface portion of said second seal means such that an enclosed annular chamber is formed around said valve shaft by said first seal means, said flange, said second seal means and said radial end surface portion of said distal end portion of said valve guide;

biassing means engaging said second seal means and disposed within said annular chamber;

a cylindrical leaf spring engaging the external surface of said first seal means and substantially surrounding said distal end portion of said valve guide; and

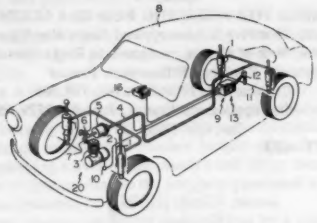
a second radial flange formed on a second end portion of said first seal means opposite said first end portion of said first seal means and in engaging contact with said leaf spring.

4,364,574

VEHICLE HEIGHT ADJUSTING APPARATUS

Tetsuo Saito, Zama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Oct. 15, 1980, Ser. No. 197,323
Claims priority, application Japan, Oct. 19, 1979, 54/135001
Int. Cl.³ B62D 37/00
U.S. Cl. 280—6 R 2 Claims



1. A vehicle height adjusting device, comprising:

height detecting means having a rotatable member rotatable in response to the height of a vehicle, at least three photo-electric detectors arranged along the circumference of the rotatable member and spaced from each other, and a number of light intercepting portions equal to the number of photo-electric detectors and being provided on the circumference of the rotatable member and being spaced from each other in the circumferential direction and cooperating with corresponding photo-electric detectors for generating one of at least five possible height signals, said one signal corresponding to the height of the vehicle;

reference signal means for generating one of at least two reference signals corresponding to a desired height of the vehicle and supplying said one signal as output;

comparator means including a comparator to which said height detecting means and said reference signal means are connected for comparing the height signal with the output of said reference signal means and generating an output signal, and a delay means for delaying the height signal supplied to said comparator, said delay means having actuating means to which said reference signal means is connected for turning the delay means on in response to receipt of a reference signal different from the previous reference signal generated by said reference signal means, and said comparator having the output thereof connected to said actuating means for turning said delay means off when said comparator produces an output indicating that said height signal and said reference signal are equal; and

an adjusting system to which said comparator means is connected for receiving the output signal from said comparator and operating to adjust the height of the vehicle.

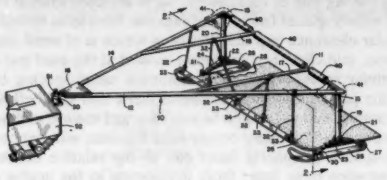
4,364,575

SKI LIFT FOR CHILDREN

Stephanie F. Schlumberger, Box 223, Woody Creek, Colo. 81656, and Donald H. Rayburn, Box 1532, Aspen, Colo. 81612

Filed Nov. 18, 1980, Ser. No. 207,877
Int. Cl.³ B62B 9/04
U.S. Cl. 280—19 5 Claims

1. A ski lift especially adapted for children comprising a frame which is at least partially supported above the surface of the snow by snow runners and is adapted to be pulled over the snow surface, said frame including a horizontal bar extending substantially the transverse distance of the frame and disposed above the level of the snow surface a distance to constitute a holding rail for children standing at the level of the snow surface and a flexible sheet-like member extending substantially throughout the transverse distance of the frame and supported by the surface of the snow and means connecting said sheet-like member to said frame so that said sheet-like member is pulled forward with said frame as said frame is pulled over the surface of the snow, said flexible sheet-like member being located under said holding rail in such position



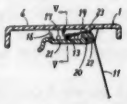
that children wearing skis can be accommodated while standing on said sheet-like member and while so accommodated can conveniently grasp said holding rail.

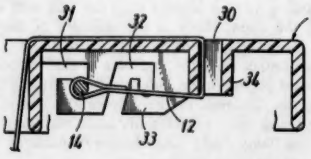
4,364,576

BABY WALKER

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Filed Oct. 29, 1980, Ser. No. 202,177
Claims priority, application Japan, Oct. 31, 1979, 54-152218[U]
Int. Cl.³ A47D 13/04
U.S. Cl. 280—87.02 W 12 Claims





1. A baby walker comprising: an upper frame disposed at a predetermined distance from the floor and having an opening for receiving the torso of a baby, wheel holding means including wheels adapted to roll along the floor for movably supporting said upper frame with respect to the floor, adjusting members attached to the lower surface of said upper frame, each adjusting member having a plurality of pairs of engaging recesses which are opening downwardly and which are transversely arranged, a seat disposed below said opening in said upper

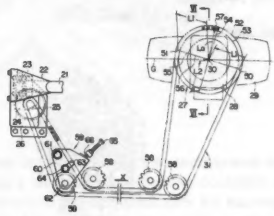
frame, straps for suspending said seat from said upper frame, said straps being connected at one of their respective ends to said seat, engaging bars installed at the other ends of said straps at right angles to the direction of the length of said straps and adapted to engage any one of said pairs of engaging recesses of its associated adjusting member, and guide means which contacts part of an associated strap to define the path along which said strap extends, said guide means being arranged so that when a load on said seat is transmitted to the strap, a tension is exerted on said strap to force said engaging bar ends into the innermost regions of said pair of engaging recesses.

4,364,577

STEERING MECHANISM

Masayuki Tateyama, Ohme, and Takashi Hosotani, Tachikawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 23, 1981, Ser. No. 237,482
Claims priority, application Japan, Feb. 29, 1980, 55-25971
Int. Cl.³ B62D *3/02*
U.S. Cl. 280—93 **5 Claims**



1. A steering mechanism for a wheel vehicle having at least one steered vehicle wheel, comprising:

a steering shaft;

a first wheel rotatably driven by said steering shaft;

a second wheel pivoting and steering said steered vehicle wheel and having a center axis of rotation extending on the equatorial plane of said steered vehicle wheel;

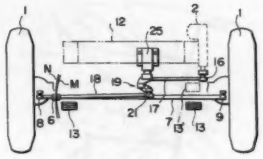
torque transmitting means passed between said first and second wheels to transmit a steering force from said first wheel to said second wheel when said first wheel is rotated by said steering shaft, said torque transmitting means having a travelling path having a meeting point at which said torque transmitting means is brought into tangential engagement with said second wheel and a parting point at which said torque transmitting means is brought out of engagement with said second wheel, said travelling path having a semi-circular turning portion at which said torque transmitting means is engaged with the circumferential section of said second wheel; characterized in that said second wheel is formed to have such a circumference that the length between the center axis of rotation of said second wheel and any one of said meeting and parting points of said travelling path of said torque transmitting means is smaller than the length between the center axis of rotation of said second wheel and an arbitrary point on the semi-circular circumferential section of said second wheel in the state that said steered vehicle wheel assumes a straight movement position.

4,364,578

LATERAL DRAG LINK TYPE STEERING LINKAGE FOR A VEHICLE

Hideo Ikeda, and Hideo Aizawa, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 24, 1980, Ser. No. 190,293
Claims priority, application Japan, Oct. 1, 1979, 54-125420
Int. Cl.³ B62D *7/06*
U.S. Cl. 280—95 R **13 Claims**



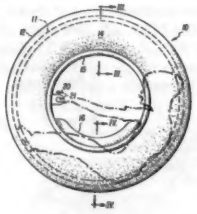
13. A lateral drag link type steering linkage for an automotive vehicle equipped with a vehicle frame and a pair of front wheels and a pair of rear wheels attached thereto, characterized by a relay lever pivotally mounted at one end thereof to the vehicle frame, the relay lever having a connecting portion, a drag link ball joint through which the connecting portion of the relay lever is movably joined to one end of a drag link, a relay rod one end of which is movably connected to one end of a pitman arm for a steering gear and the other end of which is movably connected to the connecting portion of the relay lever, the drag link ball joint being positioned near the imaginary line between a pair of knuckle ball joints for a pair of knuckle arms, wherein the drag link ball joint is positioned within about 40 mm above or below the imaginary line between both the knuckle ball joints.

4,364,579

ROCK AND ROLL RECREATIONAL TOY

John A. Fisher, 2458 Red Apple Dr., Dayton, Ohio 45431

Filed Jul. 13, 1981, Ser. No. 283,013
Int. Cl.³ B62K *1/000*; A63G *29/000*
U.S. Cl. 280—206 **12 Claims**



1. A rock and roll amusement toy comprising an annular body, said body having an outer periphery surface with a pair of spaced-apart profiled hoop edge ground engaging portions that have the same diameter and are joined by a generally cylindrical portion having a smaller diameter than said edge portion, each of said edge portions being connected to a respective side wall portion, each said wall portion terminating in a respective inner rim, gripping means joining said rims, and restraining means joining said inner rims proximate said gripping means, said restraining means defining a sector of annular space for receiving and surrounding the front, sides and back of a person who by holding said gripping means with his arms extending over said annular space is capable of causing said body to rock on a level surface and by rocking to roll over.

4,364,580

WHEELCHAIR

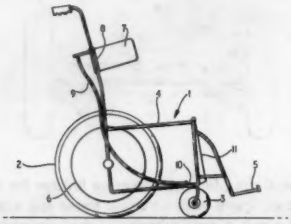
Nigel G. Shapcott, Angus, England, assignor to The School of Bioengineering and Biophysics of the University of Dundee, Dundee, Great Britain

Filed Sep. 25, 1980, Ser. No. 190,896

Claims priority, application United Kingdom, Sep. 29, 1979, 7933873

Int. Cl.³ A61G 5/02

U.S. Cl. 280—266 8 Claims



1. A wheelchair having a frame, a seat on the frame, road wheels mounted on axles on the frame, two of the road wheels being pivotal independently of one another about axes normal to their respective axes of rotation, and steering mechanisms one for each of the pivotal road wheels and independent of one another, the steering mechanisms arranged to be actuated by movement of the upper body of an occupant of the seat, one of the steering mechanisms having a lever actuatable to pivot its respective pivotal road wheel in one direction only and the other steering mechanism having a lever actuatable to pivot its respective pivotal road wheel in the opposite direction only, the pivotal road wheels being otherwise freely pivotal.

4,364,581

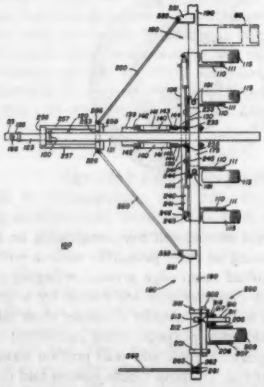
FOLDABLE IMPLEMENT FRAME AND HITCH

Kenneth E. Shoup, P.O. Box 121, Bonfield, Ill. 60913

Continuation-in-part of Ser. No. 834,666, Sep. 19, 1977, abandoned. This application Feb. 11, 1980, Ser. No. 120,572

Int. Cl.³ A01B 65/02

U.S. Cl. 280—411 A 19 Claims



7. A foldable implement frame and hitch for attachment to a draft vehicle equipped with a three-point hitch, comprising a support frame carrying a support wheel for supporting said support frame upon an underlying surface, a main frame including two telescoping frame members, the outer one of said frame members being supported upon said support frame and the inner one of said frame members carrying on the other end thereof a hitch for connection to the three-point hitch on a draft vehicle, two wing frames pivotally mounted on the top of said support frame respectively on either side of said outer frame member for movement between extended working positions wherein said wings are in vertical alignment with said support frame and retracted transport positions, two wing wheel assemblies respectively mounted on said wing frames adjacent to the outer ends thereof and each including a support wheel for supporting the outer end of the associated wing frame upon an underlying surface, and two wing motors connected respectively between said outer frame member and the associated one of said wing frames for moving said wing frames between the extended working positions and the retracted transport positions, the inner one of said frame members extending a substantial distance beyond said support frame in a direction away from said hitch so that upon operation of said wing motors and the telescoping of said frame members to place said wing frames in the extended working positions thereof the associated draft vehicle is disposed only a short distance from said wing frames to provide good maneuverability of said implement frame in the field.

4,364,582

VEHICLE BODY SUSPENSION SYSTEM

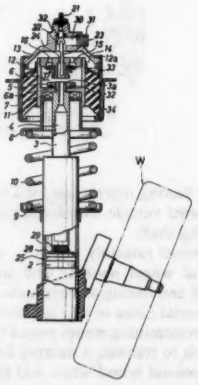
Noriyuki Takahashi, Tokyo; Takumi Sakaguchi, and Yasutomo Tajima, both of Gyoda, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha & Showa Mfg. Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 216,940

Claims priority, application Japan, Dec. 17, 1979, 54-162804; Dec. 17, 1979, 54-162805

Int. Cl.³ B60G 3/00

U.S. Cl. 280—698 14 Claims



1. A suspension system for supporting the body of a vehicle, comprising:

a cylinder connected to a wheel of said vehicle;

a piston slidably disposed within said cylinder;

a piston rod coupled to said piston;

said piston and said piston rod having an oil channel extending axially therethrough;

coupling means including an annular elastic member arranged concentrically around an end of said piston rod remote from said piston, said coupling means connecting said piston rod to the body of said vehicle through said elastic member;

an oil chamber having a peripheral wall defined in part by part of the peripheral surfaces of said elastic member, said oil chamber having a volume which varies in accordance with deformation of said elastic member;

first damper means provided between said oil channel and

said oil chamber for restraining movement of said piston in the direction of said wheel when said piston is moved in said direction relative to said cylinder; and

second damper means provided on said piston for restraining movement of said piston in the direction of said vehicle body when said piston is moved in the direction of said vehicle body.

4,364,583

WEBBING GUIDE DEVICE

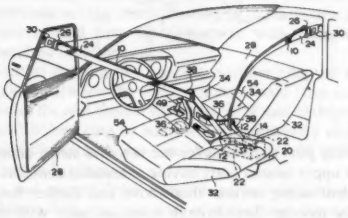
Hisashi Ogawa, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 18, 1980, Ser. No. 207,889

Claims priority, application Japan, Feb. 18, 1980, 55-19481[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—802 **10 Claims**



1. A webbing device for use in a seatbelt system for automatically fastening a webbing to protect an occupant in an emergency of a vehicle to the occupant after his entering the vehicle, wherein the intermediate portion of the webbing is moved forward in the vehicle when the occupant enters or leaves the vehicle, comprising:

(a) a shaft supported on an occupant's seat, the axis of which is held substantially horizontally and shifted through a predetermined angle from the lateral axial line of the vehicle;

(b) an arm rotatably secured near one end thereof to said shaft, disposed at the inboard side of said seat and rotatable in the forward and rearward directions in the vehicle, said arm being provided at an intermediate portion thereof with a bent portion for preventing said arm from interfering with said seat when said arm is rotated in the forward and rearward directions in the vehicle;

(c) a guide ring provided at the other end of said arm for longitudinally movably supporting the intermediate portion of said webbing, said guide ring being disposed more outboardly in the vehicle when it is moved along with the rotation of the arm in the forward direction in the vehicle than when the arm is rotated in the rearward direction in the vehicle due to the presence of said shaft being shifted from the lateral axial line of the vehicle, whereby said guide ring is prevented from interfering with a shift knob; and

(d) a motor connected to said shaft for rotating said arm forward in the vehicle, when the occupant enters or leaves the vehicle, to bend the intermediate portion of the webbing forward in the vehicle, thereby enlarging a space for the occupant to enter or leave the vehicle.

4,364,584

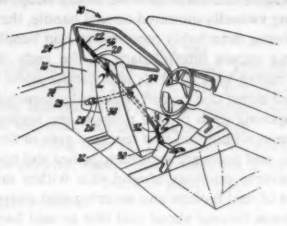
JUNCTION RING FOR CONTINUOUS-LOOP PASSIVE SEAT BELT SYSTEM

Lloyd W. Rogers, Jr., Utica, and James A. Winnale, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 15, 1981, Ser. No. 254,500

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—802 **3 Claims**



1. In vehicle seat belt system including a continuous-loop belt having ends mounted on the vehicle door, an anchor belt having an inboard end mounted inboard the occupant seat and an outboard end, and a junction device connected to the outboard end of the anchor belt and slidably encircling the continuous-loop belt to define variable length lap and shoulder belt portions thereof, the improvement comprising:

yieldable means acting between the junction devide and the anchor belt to establish the junction device at a normal angular position relative the anchor belt to streamline the junction device for low interference travel across the occupant torso during opening and closing movement of the door, said yieldable means being yieldable upon imposition of oppositely directed occupant restraint loads on the continuous-loop belt and anchor belt whereby the junction device is permitted to seek an angular position providing optimum occupant restraint effectiveness.

4,364,585

SKI POLE

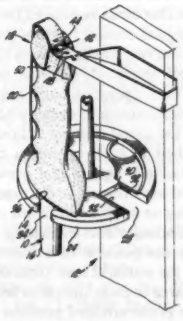
Michael P. Shields, 5977 Reseda Blvd., Tarzana, Calif. 91356

Continuation-in-part of Ser. No. 886,931, Mar. 15, 1978, Pat. No. 4,247,132, which is a continuation-in-part of Ser. No. 783,170, Mar. 31, 1977, Pat. No. 4,175,683. This application Mar. 12, 1979, Ser. No. 19,738

The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.

Int. Cl.³ A63C *11/22*

U.S. Cl. 280—814 **15 Claims**



1. A ski pole for use in securing together a pair of skis to facilitate carrying thereof, said ski pole comprising a basket, a

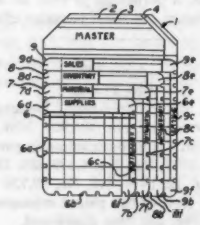
ski pole shaft and a grip, said basket being carried by said shaft and having a first recessed area therein, said area defining a curvilinear gripping surface and having an outer opening of reduced transverse dimension for receiving and retaining a second ski pole therein and a second recessed area readily positioned within said basket and disposed approximately 90° about said basket with respect to said first recessed area for receiving a transverse portion of a pair of adjacently disposed skis, said grip being secured to the upper end of said shaft and including a handle and an expansible safety strap, one end of said strap being swivelly mounted on said handle, the other end of said strap being detachably mounted to said handle and said strap including means intermediary to the ends thereof for adjustably securing said strap to said handle upon said strap being extended about said pair of adjacently disposed skis such that upon disposing each of said poles in the region adjacent the grips thereon within said first recessed area in the basket of the other pole, said poles are secured together and upon disposing said transverse portions of said skis within said second recessed areas of said baskets and securing said straps intermediary of the ends thereof about said skis to said handles, said skis are tightly secured to said poles for the carrying of said poles and skis.

4,364,586

STATUS RECORD SYSTEM

Clyde E. Ott, c/o Pace Precision Tool & Die Co., Inc., Ohio Ave., DuBois, Pa. 15801

Filed Jul. 22, 1980, Ser. No. 171,198
Int. Cl.³ B42D *15/00*; B42F *21/00*
U.S. Cl. 283—55 **1 Claim**



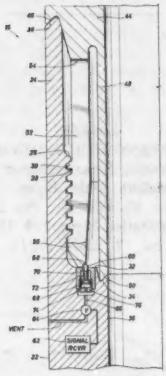
1. A master record card and a series of one or more operation description status cards associated therewith, positioned in predetermined aligned contact relation thereto, each operation card being progressively smaller in area than a card positioned rearwardly thereof, to provide simultaneous viewing of an area in the margin of each operation card, a signal element in each margin for said simultaneous viewing when the cards are positioned as stated, the signal element indicating the status of the operation described in each operation card, each operation card being substantially square and provided with means to position such card with respect to the master card, each operation card including an area of a different color at certain of the corners, corresponding colors indicating a corresponding status of operation, the position of a specific color area being determinative of the status, at least three of said corners having a different color area at each, the cards being shiftable to move a color area into predetermined position to signify action required, the predetermined position for each color area in each series of operation cards being identically related to the master card.

4,364,587

SAFETY JOINT

Travis L. Samford, 6110 Elmgrove, Spring, Tex. 77379

Continuation-in-part of Ser. No. 69,639, Aug. 27, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 209,686
Int. Cl.³ F16L *37/08*
U.S. Cl. 285—3 **25 Claims**



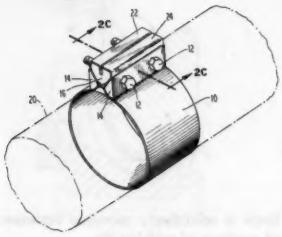
1. Safety joint apparatus for use in a drill string comprising:
(a) an upper tubular body having a threaded connection with a drill string portion thereabove and further having an axial passage therethrough communicated with the drill string to conduct drilling mud therethrough;
(b) a lower tubular body having a threaded connection with a drill string portion therebelow and further having an axial passage therethrough communicated with the drill string to conduct drilling mud therethrough;
(c) first and second mating threaded tubular surfaces concentrically joined to one another, said threaded tubular surfaces being supported by respective ones of said upper and lower tubular bodies and further including:
(1) threads on one of said mating threaded surfaces formed of coacting helically arranged shoulders, one of said shoulders positioned at an angle to cooperatively receive in threaded engagement therewith the other of said mating threaded surfaces;
(2) wherein said one shoulder is set at an angle to permit the other of said mating threaded surfaces to be pulled free of one of said mating threaded surfaces;
(3) wherein the other of said mating threaded surfaces incorporates a plurality of lengthwise slots to define a set of individual concentrically arranged collet fingers permitting relative radial deflection of said fingers to enable the threads to threadingly engage the threads on the other of said mating threaded surfaces on rotation and to ride over the threads on axial pull to separate said first and second mating threaded surfaces;
(4) lock means for securing said fingers in a radially determined relationship which prevents radial deflection thereof to maintain said first and second mating threaded surfaces in a threaded position preventing axial movement therebetween; and
(d) vibration responsive means for securing said lock means in a locking position and operative to release said lock means.

4,364,588

BAND SEAL CLAMP

Steven R. Thompson, Moore, Okla., assignor to Garlock, Inc., Longview, Tex.

Filed Nov. 10, 1980, Ser. No. 205,639
Int. Cl.³ F16L *21/06*
U.S. Cl. 285—419 **15 Claims**



1. A band clamp for clamping of one or more tubular members, comprising:

an elongated flat strip of material adapted to be circumferentially wrapped around said tubular members to be coupled and having outwardly extending end portions, said end portions having slots extending in the direction of elongation of said strip for interaction with clamping means inserted therethrough;

a central shaping and spacing member adapted to be disposed between the end portions of said strip and having holes formed therein for insertion of said clamping means, said holes being so sized as to fit relatively closely with said clamping means, and shaped to fit said tubular members to be clamped; and

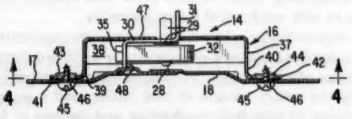
first and second force transmitting members adapted to be disposed on opposite sides of said central shaping member and of said end portions of said band, said force transmitting members having holes formed therein for insertion of said clamping means and having outwardly extending reaction surfaces formed thereon to interact with inwardly extending reaction surfaces formed on the end portions of said band, whereby the slots permit the end portions of said band to move generally radially outwardly with respect to said tubular members when clamped by said clamping means.

4,364,589

PYROLYTIC LATCH ASSEMBLY HEAT COVER FOR RANGES

Howard E. Watson, Marion, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 16, 1980, Ser. No. 197,568
Int. Cl.³ E05C *5/02*
U.S. Cl. 292—113 **12 Claims**



1. In a latching mechanism having a latch assembly, locking means for locking the latch assembly, a heat sensor, mounting bracket means for supporting the sensor in the mechanism, and means responsive to the sensor for operating the locking means as a result of the sensor sensing a preselected high temperature of an adjacent wall, the improvement comprising:

a cover housing said sensor and having a force transfer portion engaging said mounting bracket means; and

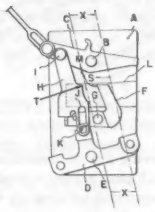
means for securing said cover to said adjacent wall with the force transfer portion, as a result of the cover being secured to said wall, urging said mounting bracket means to a preselected disposition relative to said wall to dispose said heat sensor supported by the mounting bracket means in a preselected thermal transfer spaced relationship to said wall for causing operation of the locking means in accurate correlation with the wall temperature.

4,364,590

AUTOMOBILE DOOR LOCKING APPARATUS WITH CANCELLATION MECHANISMS

Yoshikazu Hamada, Tokyo, Japan, assignor to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 140,089
Claims priority, application Japan, Jul. 9, 1979, 54-86668
Int. Cl.³ E05C *3/00*
U.S. Cl. 292—336.3 **3 Claims**



1. An automobile door locking apparatus; which comprises an open lever laterally extending over a base body at its upper middle portion and pivotally mounted to said base body, a locking lever pivotally mounted by a shaft to the lower middle portion of the base body, and a connecting lever pivotally connected at its upper end to one of the ends of the open lever and having at its lower end formed as a slot opening which extends substantially vertically, said locking lever having a portion which extends from a portion thereof adjacent to its shaft toward the slot opening of the connecting lever and having a pin which projects from said portion and engages in the slot opening of the connecting lever;

and a line connecting the shaft of said locking lever and the pivotal connection point between the open lever and the connecting lever lying to one side of a window glass passage which will be mounted in an automobile door together with said door locking apparatus;

said open lever being mounted to said base body at about its middle portion whereby the two operating arms of said open lever are of approximately equal length;

and a separate cancellation lever independently pivotally mounted on the base body at a location to one side of said window glass passage and adjacent to the slot opening of the connecting lever, said cancellation lever being pivotally mounted on an axis spaced from the axis of said locking lever shaft, and said cancellation lever being engageable with said connecting lever at a lower portion thereof.

4,364,591

EYELET TRIM STRIP FASTENING ARRANGEMENT

Alfred A. Bien, West Bloomfield, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 24, 1981, Ser. No. 256,884
Int. Cl.³ B60R *19/08*
U.S. Cl. 293—102 **2 Claims**

1. A protective plastic molding strip for attachment to a vehicle body panel comprising, in combination,

a panel member having outer and inner surfaces;

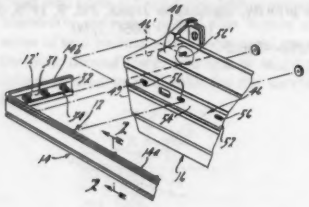
a plastic molding protective trim strip adapted to be mounted on said panel outer surface;

said molding strip having its back face formed with a pair of transversely spaced pressure sensitive tapes defining a longitudinally extending recess having a predetermined depth;

a plurality of connecting eyelets each having an outer extended circular head flange portion and an axially extending tubular sleeve portion, said head flange portion having a thickness generally the same as but less than the recess depth;

each said eyelet head flange portion planar face adhesively bonded to the strip recess;

said panel member having a plurality of spaced openings each dimensioned for the passage of an eyelet sleeve portion;



each said eyelet having a metal retention disc on said panel inner surface, each disc having a predetermined diameter such that it engages said panel inner surface over an area substantially larger than the surface area of its associated eyelet head flange, the discs formed with a centrally located circular hole being of a predetermined diameter generally the same as the outer diameter of said eyelet sleeve plus a working clearance sufficient to permit the sleeve to pass through the disc hole; and

means for expanding the free end of each said eyelet sleeve by applying a transverse pinching force thereto to form a laterally expanded bulbous portion for engagement with the outer surface of its associated disc to prevent axial displacement of said disc while allowing some axial movement of said disc relative to said sleeve whereby the molding strip is adapted for mounting on panels of various thicknesses.

4,364,592

MULTI-PURPOSE LOG HANDLING TOOL

Charles P. Jackson, 322 Thornridge Dr., Stamford, Conn. 06903

Filed Mar. 20, 1981, Ser. No. 245,964

Int. Cl.³ B65G 7/12

U.S. Cl. 294—26 **16 Claims**

1. A multi-purpose tool for handling logs, said tool including:

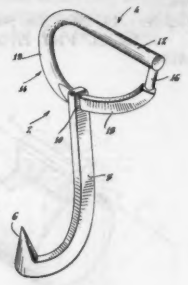
a hook having an opening defined at one end thereof, said hook being configured for gripping a portion of a log,

a handle received through said opening in said hook for mounting said hook to said handle,

said handle including a first section of smaller cross-sectional dimension than said opening in said hook so that said handle is pivotal relative to said hook when said opening is positioned on said first section of said handle,

said handle including a second section having a cross-sectional area substantially complementing the cross-sectional area of said opening in said hook, the shape of said cross-section of said opening and said second section being such that said handle is maintained in an extended position relative to said hook and not pivotal therewith when said opening is positioned on said second section of said handle,

said hook and said handle being slideably movable relative to each other through said opening in said hook so that



said hook is selectively movable between said first and second sections of said handle.

4,364,593

OBJECT GRASPING SYSTEM

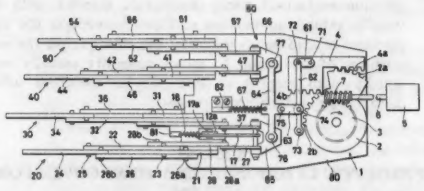
Yuji Maeda, Kashiwa, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Oct. 27, 1980, Ser. No. 200,912

Claims priority, application Japan, Oct. 25, 1979, 54-138054

Int. Cl.³ A61F 1/06; B25J 15/00

U.S. Cl. 294—106 **5 Claims**



1. In an object grasping system including a mechanical finger assembly operable to hold the object, a constant speed motor, a motion converting means for converting the rotary motion of said motor into linear motion, and a link mechanism for transmitting linear motion from said motion converting means to said mechanical finger assembly,

the improvement wherein the said motion converting means comprises a stepped gear having at least two circular gear trains of different pitch circle and being constantly rotated by the rotary motion of said motor; and a stepped rack joined to said link mechanism and having at least two tooth trains which trains correspond to said circular gear trains of the stepped gear and are in gear engagement therewith,

whereby said stepped rack moves linearly by the rotation of said stepped gear engaged therewith first at a higher speed then at a lower speed so that said mechanical finger assembly approaches the object at a higher speed and grasps the object at a lower speed with increased moment.

4,364,594

RAILWAY WHEEL VIBRATION DAMPING DEVICE

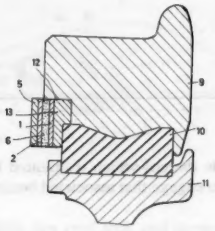
Erwin Raquet, Witten, Fed. Rep. of Germany, assignor to Fried. Krupp Huttenwerke AG, Bochum, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,894

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1978, 2835020

Int. Cl.³ B60B *17/00;* B60C *7/06;* F16F *15/12;* F16H *55/14*

U.S. Cl. 295—7 13 Claims



1. A vibration damping device for a vibrating body for damping vibrations, comprising:

a plate adapted to be connected to said vibrating body said plate lying in a plane orthogonal to vibration direction with respect to vibrating direction of said body;

an elastically flexible tongue member extending transversely to said plate, and means fixing a portion thereof to said plate and spaced therefrom to form a space between said tongue member and said plate;

a vibration absorbing material in said space; and

weight means fixed to a free end portion of said tongue member whereby said tongue member is resonant to two different frequencies.

9. In a vibration damping device for attachment to a vibrating body of a railroad wheel, said railroad wheel having a metal rim, a web, and an elastomeric material between said rim and said web, said rim being said vibratory body of said railroad wheel, the improvement comprising:

a plate, an elastically flexible tongue member with weight means at a free end thereof and spaced from said plate, a vibration absorbing material in a free space between said plate and said elastically flexible tongue member, and means fixing all of the aforesaid together with said flexible tongue member forming and said weight means forming a vibrating member to dampen two frequencies of vibration of said rim; and

means coupling said plate, said elastically flexible tongue member, said weight means and said fixing means to said metal rim, said fixing means being centrally mounted and said coupling means fixedly coupling said vibrations damping device to said rim at said fixing means of said vibration damping device to permit vibration of said tongue member on both sides of said coupling means, said coupling means extending in a direction transversely with respect to the vibrating direction of said rim.

4,364,595

VEHICLE WINDOW ASSEMBLY

Cleon Morgan; John F. Thomas, Jr., and Raymond A. Meyer, all of Holland, Mich., assignors to Donnelly Mirrors, Inc., Holland, Mich.

Filed Oct. 6, 1980, Ser. No. 194,432

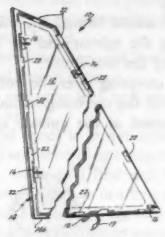
Int. Cl.³ B60J *1/02*

U.S. Cl. 296—84 R 35 Claims

1. A window assembly for vehicles adapted for installation as a unit from the exterior of a vehicle to close an opening in the vehicle body comprising:

a window pane having front, back and peripheral edge surfaces;

a decorative frame covering the periphery of said window pane, said frame including a flange extending a predetermined distance over said front surface of said window pane to cover an area adjacent said peripheral edge surface, and securing means for securing said frame to said pane; and



attaching means rigidly secured to at least one surface of said window pane for fastening said window assembly to an adjacent support, said attaching means being concealed from view when said assembly is viewed from the direction of said front surface.

4,364,596

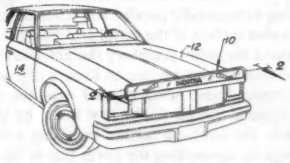
VEHICLE PROTECTIVE DEFLECTOR HAVING VISUAL ENHANCEMENT AND ILLUMINATING MEANS

Charles E. Geisendorfer, 11600 Huebner, #2105, San Antonio, Tex. 78230

Filed Apr. 1, 1980, Ser. No. 136,265

Int. Cl.³ B60J *1/20*

U.S. Cl. 296—91 4 Claims



1. In a protective deflector mountable on the frontal portion of a vehicle and having an upstanding transparent panel with a surface facing toward said vehicle, the improvement comprising: recess means in said surface opening toward said vehicle for providing visual enhancement for said panel; said recess means opening to said surface and the periphery of the openings of said recess means being surrounded by raised annuli of panel material disposed on said surface.

4,364,597

SUN VISOR FOR VEHICLES INCLUDING A MIRROR

Lothar Viertel, Saarlouis, and Klaus-Peter Kaiser, Wermelskirchen, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Jun. 18, 1980, Ser. No. 160,681

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 7921916[U]

Int. Cl.³ B60J *3/00*

U.S. Cl. 296—97 H 10 Claims

1. A sun visor with an illuminated mirror for an automotive vehicle, or the like, comprising:

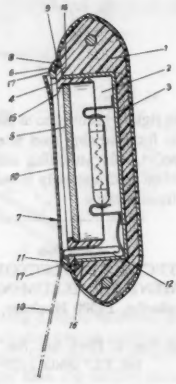
a sun visor body; a recess defined in the visor body and extending in from a large surface side wall thereof; a first light-transmitting frame positioned in the recess; the first light-transmitting frame having a peripheral margin ex-

tending substantially parallel to the large surface side wall, the peripheral margin having a first beveled surface around its periphery, the first beveled surface being beveled inwardly of the visor body aroud the entire periphery thereof;

a mirror supported in the first frame generally at the outside of the recess;

a light source located behind the mirror in the recess for back lighting the mirror and for providing light to be transmitted by the first frame;

a covering for covering over the outside of the first frame and the mirror; the covering including a covering frame generally located at the outside of the recess disposed



substantially forward of the mirror and extending around the first frame; a second surface of the covering frame being substantially parallel and complementary to the first beveled surface of the peripheral margin of the first frame around the entire periphery thereof, and cooperating with the first beveled surface to form a clip arrangement; the covering frame being clipped over the perphery of the peripheral margin of the first frame by the clip arrangement, the covering further including a cover flap and a hinge for connecting the cover flap to the covering frame at an edge of the cover flap and the hinge enabling the cover flap to pivot between a position covering the outside of the first frame and a position opening to uncover the outside of the first frame.

4,364,598

SWIVEL BEARING AND REINFORCEMENT FOR SUN VISOR

Lothar Viertel, Saarlouis, Fed. Rep. of Germany, assignor to Gebr. Happich GmbH, Fed. Rep. of Germany

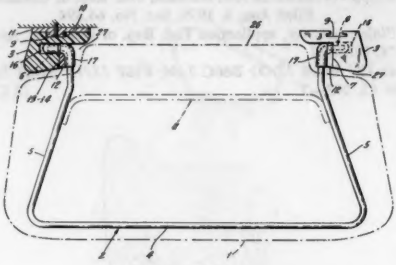
Filed Feb. 26, 1981, Ser. No. 238,576

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011639

Int. Cl.³ B60J *3/02*

U.S. Cl. 296—97 K **32 Claims**

1. A sun visor, including a visor body having opposite lateral edges; a reinforcing insert on the body for stiffening the body; bearing pins supported on the insert and located at the opposite lateral edges of the visor body; each bearing pin including a portion protruding from the visor body to engage in bearing block means associated with that bearing pin; a first leg adjacent to each bearing pin, the first leg



having a side thereof which is oriented for being biased outwardly to engage that associated bearing block means.

4,364,599

TRUCK, ESPECIALLY A LARGE CAPACITY VEHICLE OR TRACTOR SEMI-TRAILER COMBINATION

Hans Moll, Gräfelfing, and Klaus Flesche, Schlangenbad, both of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Ausburg-Nürnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

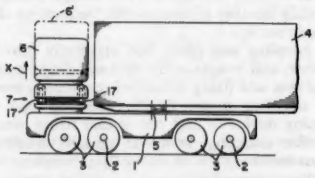
Continuation-in-part of Ser. No. 946,790, Sep. 28, 1978, Pat. No. 4,226,466. This application Jul. 30, 1980, Ser. No. 173,467

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1977, 2741125

The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.

Int. Cl.³ B62D *27/00*

U.S. Cl. 296—190 **4 Claims**



1. A truck, especially large capacity vehicles and tractor semi-trailer combinations, comprising:

a motor-steering unit;

a payload carrier connected to said motor-steering unit;

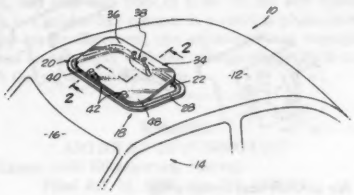
at least one vehicle control cab; and

at least one additional structure, said at least one vehicle control cab and said at least one additional structure respectively being in the form of separate interconnected units arranged on top of one another in any desired order, the lowermost respective unit being mountable on said motor-steering unit, said at least one additional structure being a resting and sleeping cabin, said at least one vehicle control cab being arranged firmly connected to said at least one additional structure.

4,364,600
SAFETY VEHICLE SUN ROOF LOCK AND SUPPORT APPARATUS

Peter Hauber, 9001 N. Glenoaks, Sun Valley, Calif. 91352

PCT No. PCT/US81/00164, § 371 Date Feb. 3, 1981, § 102(e) Date Feb. 3, 1981, PCT Pub. No. WO82/02691, PCT Pub. Date Aug. 19, 1982
PCT Filed Feb. 3, 1981, Ser. No. 278,909
Int. Cl.³ B60J 7/18
U.S. Cl. 296—218 17 Claims

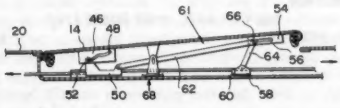


1. Safety vehicle sun roof lock and support apparatus for vehicle sun roof panels movably mounted in a vehicle roof opening circumscribed by a fixed flange, said apparatus comprising a roof panel, a roof opening interfitting flange defining a panel seat, anchor means secured to the flange freely of protrusions engendering personal injury, and an articulated coupler comprising first bar means connected at one end to the panel, and second bar means having left and right hand portions separably connected at one end to the anchor means in biased relation, said first and second bar means being pivotally connected to each other at their respective other ends for locking the panel in seated or opened position relative to the flange, said second bar means being separable from its anchor means connection for complete panel removal from said flange, said anchor means being thereby exposed and without exposing injury engendering protrusions.

4,364,601
VEHICLE SUN ROOF CONSTRUCTION

Yoshinori Katayama, Tokyo, and Yoshimasa Tuchiya, Sayama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 10, 1980, Ser. No. 195,739
Claims priority, application Japan, Oct. 12, 1979, 54-130797
Int. Cl.³ B60J 7/04
U.S. Cl. 296—221 11 Claims



1. In a vehicle having a cabin and a roof panel formed with a first opening, a sun roof comprising:

a frame fixed to the inboard surface of said roof panel to define a space between said roof panel and said frame, said frame being formed with a second opening which cooperates with said first opening to define a sun roof opening;

a rigid panel for closing said first opening;

first and second guide rails secured to said frame, said first guide rail being disposed on one side of said second opening and said second guide rail being disposed on the other side of said opening;

first and second shoes slidably disposed on said first and second guide rails, respectively, each of said first and second shoes having a pin thereon;

third and fourth shoes slidably mounted on said first and second guide rails, respectively;

first and second guide plates depending from a first end of said rigid panel, said first guide plate being formed with a first shaped slot for receiving said pin of said first shoe therein, said second guide plate being formed with a second shaped slot for receiving said pin of said second shoe therein, said first and second shaped slots being shaped to extend upwardly toward said rigid panel as they extend toward a second end of said rigid panel;

third and fourth guide plates depending from said second end of said rigid panel, and

a linkage system interconnecting said first and second shoes with said third and fourth shoes,

said linkage system and said first and second guide plates cooperating so as to

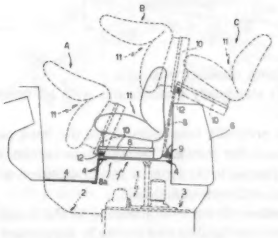
(a) cause said rigid panel to lower away from said first opening toward said second opening and into said space without tilting, when said first and second shoes are driven from a home position in a first direction through a predetermined distance along said first and second guide rails, and thereafter, upon subsequent driving of said first pair of shoes in said first direction, to move away from between said first and second openings to open said sun roof opening, and

(b) when said first and second shoes are driven from said home position in a second direction, cause said rigid panel to pivot about one end thereof so that the other end thereof is lifted above the plane defined by said first opening.

4,364,602
SEAT SUPPORT STRUCTURE FOR THE DRIVING OF AN EARTH MOVING MACHINE

Corrado Rigazio, Turin, Italy, assignor to Fiat-Allis Macchine Movimento Terra, S.p.A., Lecce, Italy

Filed Jul. 2, 1980, Ser. No. 164,503
Claims priority, application Italy, Jul. 27, 1979, 68565 A/79
Int. Cl.³ B60N 1/02
U.S. Cl. 297—334 12 Claims



1. In a vehicle having a body structure above a portion of a mechanism of the vehicle with an access opening in the body structure to provide access to the mechanism and a seat support assembly above the access opening, said seat support assembly comprising: first pivot means attached to the vehicle body structure adjacent to the access opening adjacent to the rear of the vehicle, flat base means having one edge attached to the first pivot means for selective pivotal movement about a first axis, first latching means operable to secure said base means in a fixed position relative to the vehicle above the access opening and being releasable to permit selective pivotal movement about said first axis, seat support means coupled to an opposite edge of said base means and supporting a seat of the vehicle, second pivot means to attach said seat support means to said base means for selective pivotal movement about a second axis, said second pivot means being spaced from the first pivot means a distance greater than the height of the vehicle body structure adjacent to the access opening above the first pivot means, second latching means operable to secure said seat support means in a fixed position relative to said base

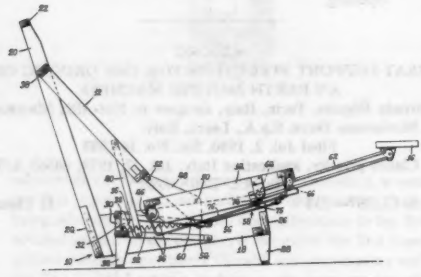
means and being releasable to permit said selective pivotal movement of said base means about said second axis independent of said selective pivotal movement about said first axis, and said selective pivotal movement about said first and second axis allowing said base means and said seat support means to be moved to a position wherein the base means is pivoted away from the access opening to an attitude substantially parallel to the vehicle body structure adjacent to the access opening, and the seat support is positioned away from the access opening and above said vehicle body structure to provide access to portions of the vehicle disposed beneath said base means and said seat support in said fixed position.

4,364,603

RECLINING CHAIR

Carl B. Johnson, Pontiac, Ill., assignor to Pontiac Furniture, Inc., Pontiac, Ill.

Filed Nov. 2, 1979, Ser. No. 90,631
Int. Cl.³ A47C *1/02*
U.S. Cl. 297—84 **11 Claims**



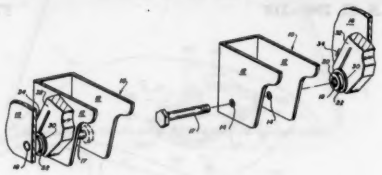
1. A reclining chair having
a normally stationary chair frame with an upstanding back portion,
a backrest pivotally suspended from the back portion of the chair frame for forward swinging movement of the lower end of the backrest from a sitting position to a reclining position, and vice versa, and
a seat member movably connected to the lower end of the backrest, and slidably and pivotally supported by the chair frame near the front of the chair frame;
the improvement wherein
the chair is also provided with a retractable footrest movable from a stowed position beneath the seat member to an extended position forwardly thereof to support the legs of the occupant, and a drive linkage beneath the seat member to extend and retract the footrest when actuated;
the movable connection between the seat member and backrest comprises a lever which is pivoted to both of them and connected to said drive linkage, and is oriented in said sitting position to utilize the weight of the occupant to cause the rear end of the seat member to descend and thereby to advance the lower end of the backrest relative to the seat member and to actuate the drive linkage to extend the footrest, the rear end of said seat member being conversely raisable by the forcible retraction of the footrest; and
means capable of being disabled by the occupant is provided to prevent the descent of the rear end of the seat member from the sitting position.

4,364,604

AIRCRAFT SEAT

Rene J. Brunelle, Wolcott, Conn., assignor to Kidde, Inc., Clifton, N.J.

Continuation-in-part of Ser. No. 42,324, May 25, 1979, abandoned. This application Mar. 20, 1980, Ser. No. 132,125
Int. Cl.³ A47C *7/62*
U.S. Cl. 297—163 **10 Claims**



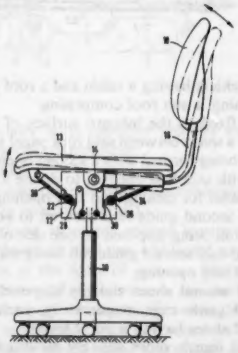
1. An aircraft seat comprising
a pair of pivot pins,
a pair of spaced seat back mounting brackets having apertures therein to permit the insertion of said pins therethrough,
a pair of side frame forgings, each including a boss,
each of said bosses including a peripheral clamping surface and an aperture therein for receiving one of said pins such that said pin and said boss surface have a common axis,
a tray assembly including a pair of legs having bifurcated clamp ends for clamping over said peripheral clamping surfaces for selective pivotal motion relative thereto, whereby
said tray assembly and said seat back brackets pivot about the common axis,
said tray assembly can be removed without removing said seat back mounting brackets, and
said seat back mounting brackets may be removed, by removing said pins, without removing said tray assembly.

4,364,605

SEAT WITH A SEAT PLATE OF ADJUSTABLE INCLINATION AND A BACKREST OF ADJUSTABLE INCLINATION

Hermann Meiller, Amberg, Fed. Rep. of Germany, assignor to Willibald Grammer, Amberg, Fed. Rep. of Germany

Filed Jun. 25, 1980, Ser. No. 162,762
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929428
Int. Cl.³ A47C *3/00*; B60N *1/02*
U.S. Cl. 297—306 **10 Claims**



1. A seat, particularly an office chair, comprising a seat plate

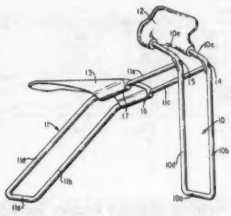
of adjustable inclination arranged on a seat carrier, and a backrest of adjustable inclination, characterised in that a first gas spring acts between the seat plate and seat carrier to adjust the inclination of the seat plate and a second spring acts between the seat carrier and backrest to adjust the backrest inclination, that the valve actuating pins of the gas springs are provided at the ends associated with the seat carrier and are oppositely disposed, preferably in V formation, and that a horizontal adjusting lever extending transversely to the valve actuating pin arrangement is mounted on the seat carrier to pivot vertically and horizontally about a common pivot point disposed beyond the straight connecting line between the valve actuating pins, and that two control arms on the seat carrier are movable in a scissor-like manner in a vertical plane containing the valve pin arrangement, the adjusting lever engaging between and co-operating with the control arms which co-operate with the valve actuating pins.

4,364,606

ARTICLES OF FURNITURE

Georg Eknes, 5160 Eikangervag, Norway

Filed Jul. 11, 1980, Ser. No. 168,681
Int. Cl.³ A47C *3/20*
U.S. Cl. 297—337 **8 Claims**



1. An article of furniture of an adjustable kind, such as a chair, especially a child's chair, as well as a stool and similar furniture, comprising a support component provided with a pair of backward inclining elongate tubular members for supporting a seat in adjustable positions thereat, whereas at the rear portion of said seat said tubular members are passing through a pair of support sleeves and a pair of slotted openings diverging downwards from said support sleeves, which slotted openings are allowing the seat to be tilted about a horizontal axis at the rear side portion of the seat by lifting the front side portion thereof, characterized in

that the support sleeves are made of a slide promoting material, such as plastic material, for allowing the seat to be slided freely along said tubular members with a minimum of friction, in an upwardly tilted position of the seat, and

that the upper side portion of said slotted openings spaced from said support sleeves is provided with a block of elastically yielding, friction promoting material, such as rubber, and said block is providing a main support surface between said seat and its associated tubular support member and of sufficient thickness to provide a spring effect between said seat and its associated tubular member, in a normal downwardly tilted position of the seat.

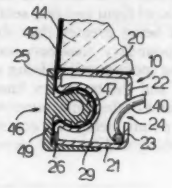
4,364,607

SEAT FOR VEHICLES

Pierluigi Tamburini, Castiglioncello, Italy, assignor to Gilardini S.p.A., Turin, Italy

Filed Jul. 28, 1980, Ser. No. 173,140
Int. Cl.³ A47C *7/02*
U.S. Cl. 297—452 **4 Claims**

1. A seat for vehicles comprising a support structure for a seat cushion, a support structure for a seat back, and respective stuffing parts at least partially supported by said structures; said support structures each having an inner surface configured to receive and be engaged by an element, such as a spring, forming a part of said seat; each of said support structures having an outer surface which includes a recessed zone adapted to receive and restrain therein an auxiliary element, said recessed zone having the configuration of a cavity with a restricted opening; said auxiliary element having a first portion



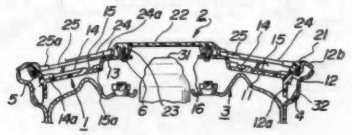
adapted to be forced and snap-fastened into said zone and a second portion which acts as a cover element for the outer surface of said support structures, such that said auxiliary element contacts an end portion of a surface covering material for said stuffing, locks said material inside said zone and covers the outer surface of said support structures and the contiguous areas of said surface covering material.

4,364,608

WHEEL COVER FOR A VEHICLE

Takao Ookubo, Yokohama; Yuko Baba, Tokyo, and Kiyoshi Kamihama, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd. and Hashimoto Forming Kogyo Co., Ltd., both of Yokohama, Japan

Filed Jun. 3, 1980, Ser. No. 155,926
Claims priority, application Japan, Jun. 4, 1979, 54-68843
Int. Cl.³ B60B *7/00*
U.S. Cl. 301—37 SS **3 Claims**



1. A wheel cover of a vehicle wheel, which comprises:

a first cover member including a first outer peripheral portion, a first inner peripheral portion and a plurality of radially extending first spoke portions located between and connected to the first outer and inner peripheral portions, said portions of the first cover member being formed integrally;

a second cover member including a second outer peripheral portion, a second inner peripheral portion and a plurality of radially extending second spoke portions located between and connected to the second outer and inner peripheral portions, said portions of the second cover member being formed integrally;

said first cover member being disposed on the axially rear side of the second cover member coaxially thereto, with the first outer and inner portions in abutting engagement with the second outer and inner portions, respectively, leaving a space between the first and the second spoke portions;

said first and second cover member being connected with each other such that the first spoke portions are visible from outside through uninterrupted spaces between the second spoke portions;

the spoke portions of each cover member crossing each other at cross points between the respective outer and

inner peripheral portions, the spoke portions of each cover member which cross each other being axially staggered;

the cross points of the spoke portions of the first cover member being circumferentially at mid points between two neighboring cross points of the spoke portions of the second cover member;

each spoke portion of at least the second cover member including an axial front and rear section, the width of said front section being greater than the width of the rear section, the boundary lines between said front and rear sections of the spoke portions lying axially in front at said cross points, and the boundary lines between said front and rear sections of the spoke portions lying axially behind at said cross points, being in a common plane; and

means for attaching said first and second cover members to said wheel.

4,364,609

EMPTY/LOAD BRAKE CONTROL VALVE APPARATUS

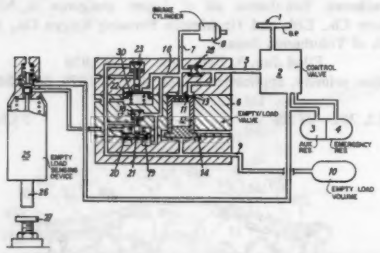
David J. Wickham, London, England, assignor to Westinghouse Brake & Signal Co., England

Continuation of Ser. No. 772,255, Feb. 25, 1977, abandoned, which is a continuation of Ser. No. 638,668, Dec. 8, 1975, abandoned. This application Jul. 27, 1978, Ser. No. 928,578

Claims priority, application United Kingdom, Feb. 8, 1975, 05450/75

Int. Cl.³ B60T *8/18*

U.S. Cl. 303—23 R **2 Claims**



1. An empty/load fluid pressure control valve apparatus for controlling the brake cylinder pressure of a load carrying vehicle comprising: a control valve housing having a brake pressure input port, a brake pressure output port and a first communicating passage connecting the output port with the input port; means defining an extra volume; a first differential pressure means responsive to differences in pressure between said extra volume and the input port; a cut-off valve means, operable by said differential pressure means, for closing the communicating passage connecting the output port with the input port; a load sensing device for selectively producing at the output thereof a low pressure signal when the vehicle is empty and higher pressure signal when the vehicle is loaded; a second communicating passage connecting the output port and the extra volume; a second differential pressure means responsive to differences in pressure between the output of said load sensing device and the output port; a first resilient bias means acting on the second differential pressure means in the same sense as the output of the load sensing device so as to establish a first predetermined operating value in an empty condition and a second, higher, predetermined operating value in a loaded condition; a second valve in the second communicating passage operable by said second differential pressure means in a sense such that the second valve is closed in response to an output port pressure less than said first predetermined value for an empty condition and an output port pressure less than said higher second predetermined value for a loaded condition; a vent leading to atmosphere and connected to the extra volume; a third valve in the vent and operable independently of the load sensing device; a second resilient bias means urging the third valve open; and a third pressure responsive means connected to operate said third valve to a closed position in response to pressure at the output port in excess of a third predetermined value determined by the resilient bias means such that, in operation, a decrease in pressure at the output port below the third predetermined value, irrespective of the output of the load sensing means, causes the third valve to open thereby venting pressure in the extra volume so that the cut-off valve means re-opens the first communicating passage to recharge the output port pressure.

4,364,610

RAILWAY VEHICLE BRAKING SYSTEMS

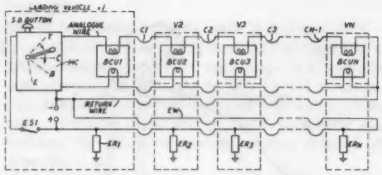
Eric F. Williams, Chippenham, England, assignor to Westinghouse Brake and Signal Company, Limited, England

Filed Mar. 28, 1980, Ser. No. 134,764

Claims priority, application United Kingdom, Mar. 28, 1979, 7911002

Int. Cl.³ B60T *15/36*

U.S. Cl. 303—36 **8 Claims**



1. In a railway vehicle braking system including an automatic slack adjuster for detecting excess slack in the brakes and for adjusting the brakes in accordance therewith and "snow brake" control means for, during operation of the "snow brake" control means, normally maintaining a light brake application when the vehicle is under traction or is coasting, the improvement wherein said "snow brake" control means includes brake interruption means operating automatically and intermittently to fully release the brakes and brake re-application means for operating automatically to re-apply the brakes after the brakes have been released by the brake interruption means at a time after the brakes have been released sufficient to permit the slack adjuster to make any adjustment necessary to accommodate any detected excess of slack.

4,364,611

SEPARATE 3-CYLINDER SYSTEM OF BRAKE FLUID FOR AUTOMOBILE SAFETY

Ming T. Jean, and Ming T. Liou, both of No. 2, Alley, 31, La. 465, Jean Chyan St., Shuh Lin Chyan, Taipei Hsian, Taiwan

Filed Aug. 26, 1980, Ser. No. 182,307

Int. Cl.³ B60T *17/18*

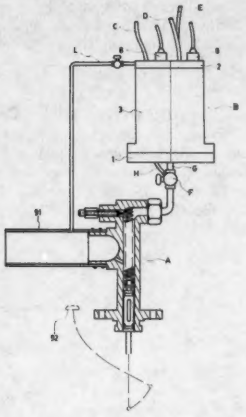
U.S. Cl. 303—84 R **7 Claims**

1. A pressing cylinder adapted to be connected to the master brake cylinder of an automobile braking system and for independently transmitting fluid pressure to the front wheel cylinders and right and left wheel cylinders in response to manual operation of an automobile brake pedal to effect braking action of said automobile, said pressing cylinder comprising in combination:

body means defining a front cylinder and right and left rear cylinders, said front cylinder having a larger bore than each of said right and left rear cylinders, said body means including piston means slidably and reciprocably engageable in each of said front cylinder and right and left rear cylinders, said piston means including sealing means sealingly engageable with said front cylinder and left and

right rear cylinder defining means for separating each of said front cylinder and said right and left rear cylinders into a fluid receiving chamber for receiving fluid from said master cylinder and a fluid discharge chamber for discharging fluid to said front wheel cylinders and said right and left rear wheel cylinders, respectively, in response to manual operation of said brake pedal;

first means covering said fluid receiving chamber including means defining a fluid receiving passageway, one end thereof for connection to said master cylinder, and the



other end thereof for concurrently distributing brake fluid from said master cylinder to said front cylinder and said right and left rear cylinders; and

second means covering said fluid discharge chamber including means defining fluid discharge passageways in operative communication with said front cylinder and said right and left rear cylinders for allowing brake fluid to pass therethrough in response to manual operation of said brake pedal and for connecting said pressing cylinder to said front wheel cylinders and right and left rear wheel cylinders respectively.

4,364,612

LOWER PAIR KINEMATIC ASSEMBLY WITH HYDROSTATIC BEARING

Franco Taddei, Milan, Italy, assignor to Casper S.p.A., Pavia, Italy

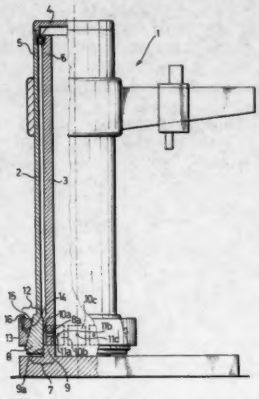
Filed Aug. 5, 1980, Ser. No. 175,675
Int. Cl.³ F16C *32/06, 33/10*
U.S. Cl. 308—5 R **2 Claims**

1. A lower pair kinematic assembly comprising:

two relatively movable, coaxial mechanical members with respective identical conjugate surfaces;

hydrostatic bearing means between said members;

means for relatively constraining the said conjugate surfaces of said two relatively movable mechanical members when said hydrostatic bearing means is inoperative, said constraining means including at least one annular member surrounding the outside surface of the outer of said two coaxial mechanical members, said annular member defining bearing means around said outside surface, and means for supplying fluid under pressure to said bearing means



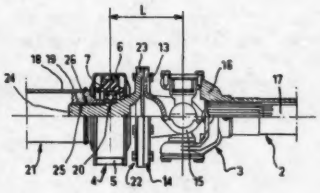
defined by said annular member to precisely lock said two mechanical members relative to each other.

4,364,613

INTERMEDIATE BEARING SUPPORT MOUNTING FOR SECTIONAL OR ARTICULATED DRIVE LINE

Jacques Mangiavacchi, Chatou, France, assignor to Glaenzer Spicer, Poissy, France

Filed Apr. 22, 1980, Ser. No. 142,711
Claims priority, application France, Apr. 24, 1979, 79 10412
Int. Cl.³ F16C *27/00*
U.S. Cl. 308—184 R **4 Claims**



1. An intermediate bearing support mounting for a sectional or articulated drive line including:

at least a first member having an internally splined sleeve fixed on its end,

a second member coupled to said first member,

a cushion housing of vibration absorbing elastic material,

at least one antifriction bearing housed in said cushion housing,

a coupling part fitted in said antifriction bearing and being provided, at a first end, with a splined cylindrical shank for telescoping in said splined sleeve, and at a second end opposite said first end, with separable means for connecting said coupling member with said second member and centering said coupling member relative to said second member,

said separable means for connection with the second member comprising a plate provided with a centering bearing surface and fastener means, and

said antifriction bearing and said splined sleeve being received beside each other along said cylindrical shank of the coupling part, said splined sleeve having a collar crimped in a groove formed at the free end of said cylindrical shank, the crimped collar axially blocking parts

including said splined sleeve and said antifriction bearing on said cylindrical shank.

4,364,614

REMOVAL METHOD FOR REMOVABLE CLOSURE MEMBER FOR BEARING UNITS

Siegfried K. Weis, Byron Center, and Donald T. Truszkowski, Grand Rapids, both of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Jul. 2, 1980, Ser. No. 165,292
Int. Cl.³ F16C *33/78, 33/80*
U.S. Cl. 308—187.1 **5 Claims**

1. A method for removing an imperforate closure member mounted on one side of the outer race means of a bearing unit, said closure member including a frangible knock-out portion therein, said method including the steps of:

(1) supporting said bearing assembly on a rigid surface with said closure member facing in an accessible direction;

(2) providing a tool for impacting said knock-out plug;

(3) impacting said knock-out portion with said tool to break said portion away from said closure member to form an aperture through said closure member; and

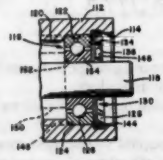
(4) prying said closure member away from said bearing unit by bending said closure member with a tool inserted in said aperture.

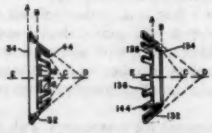
4,364,615

RETAINING RING

Richard W. Euler, LaPorte, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 8, 1980, Ser. No. 185,079
Int. Cl.³ F16C *33/30, 33/00, 13/00, 35/00*
U.S. Cl. 308—236 **3 Claims**





1. Apparatus comprising in combination:

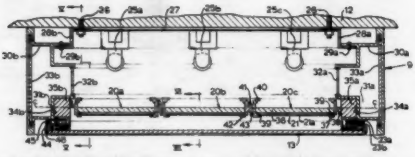
a shaft defining an annular groove therein, a bearing member having an aperture therein and received on said shaft, said bearing member defining a radial surface adjacent said groove, abutment means on said shaft for preventing said bearing member from moving in one axial direction relative to said shaft, a retaining ring received in said groove and engaging said bearing member, said retaining ring including a cone-shaped resilient rim having a radially outer edge engaging said radial surface and a plurality of resilient teeth engaging said groove, said rim defining a Belleville spring providing a continuous axial load biasing said bearing member in said one axial direction toward said abutment means, said plurality of resilient teeth extending axially in an opposite direction to said one axial direction, and said plurality of resilient teeth expanding radially outwardly when said retaining ring is disposed on said shaft whereby said plurality of resilient teeth will expand radially inwardly into said groove when in alignment therewith in order to substantially prevent separation of said retaining ring from said shaft.

4,364,616

DIRECTORY DISPLAY

Thomas G. Harkins, Northbrook, and Robert D. Peterson, Chicago, both of Ill., assignors to Nelson-Harkins Industries, Inc., Chicago, Ill.

Filed Sep. 19, 1980, Ser. No. 188,847
Int. Cl.³ A47B *77/08;* F16B *12/00*
U.S. Cl. 312—223 **11 Claims**



1. A directory display system, comprising:

a main frame with a back panel;

a light source mounted within the main frame;

at least two adjacent removable panels positioned vertically and in front of the light source in a panel supporting frame having two side members and a top and bottom member;

the top and bottom members each having a channel within which the panels are positioned, the top member channel having a free space permitting upward movement of the panels to allow a bottom of a panel being lifted to clear the bottom member channel and allow removal of the panel;

each of the panels having a light diffuser panel and indicia strips thereon with a coating thereon preventing transmission of light from the light source, the coating being selectively removed in the shape of indicia or figures desired to be displayed such that diffused light can pass therethrough;

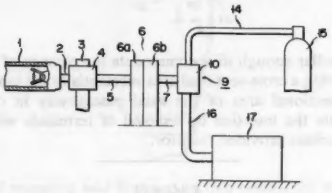
each of the panels having first and second substantially identically constructed side frames parallel to one another and fastened at respective vertical side edges of said light diffuser panel and indicia strips, each side frame having a channel receiving the vertical side edges, and a single projection opposite the channel, said single projection lying to one side of a depth center line of the side frame and having an overlapping surface positioned at the depth center line, each of said side frames being usable on either the left or right side edges of the light diffuser panel; and

one of the panels having one of its side frame projections abutting against one of the side members of the panel supporting frame, and the other side frame projection having its overlapping surface in abutment with the overlapping surface of the side frame projection of a laterally adjacent second panel, the overlapping surfaces lying on opposite sides of the center line, and wherein substantially no light can pass from the light source through cracks between the first and second panels and wherein the same side frames may be employed on either the left or right side edges of the panels.

4,364,617
METHOD AND APPARATUS FOR STABILIZING THE PRESSURE OF A GAS IN A CLOSED BODY

Takeshi Moriwaki, and Shinichi Tsunekawa, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

PCT No. PCT/JP79/00258, § 371 Date Jun. 13, 1980, § 102(e) Date Jun. 11, 1980, PCT Pub. No. WO80/00896, PCT Pub. Date May 1, 1980
PCT Filed Oct. 11, 1979, Ser. No. 196,763
Claims priority, application Japan, Oct. 13, 1978, 53-125866
Int. Cl.³ H01J 9/395
U.S. Cl. 316—24 3 Claims

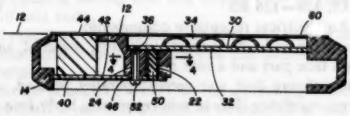


1. Apparatus for stabilizing a gas to a predetermined pressure in a closed body comprising:
a hollow body;
a first pipe connected to said hollow body and having a conductance C_1, said first pipe being connected to a source of said gas;
a second pipe connected to said hollow body and having a conductance C_2, said second pipe being connected to a decompressing system, said first and second pipes and said hollow body directly and simultaneously interconnecting said decompressing system and said source during operation; and
a third pipe connected to said hollow body and being adapted to be connected to said closed body and having a portion of least conductance C_3, said conductance C_1 being smaller than either of said conductance C_2 and said least conductance C_3, and said conductances C_1 and C_2 being so set that the gas pressure level inside said third pipe is substantially the same as said predetermined gas pressure attained in said closed body when the gas from said gas source constantly flows from said first pipe to said second pipe.

4,364,618
ELECTRONIC DEVICE PACKAGE

Ernest E. Godsey, Tucson, Ariz., assignor to Burr-Brown Research Corp., Tucson, Ariz.

Filed May 19, 1980, Ser. No. 150,740
Int. Cl.³ H01R 9/09
U.S. Cl. 339—17 LC 3 Claims

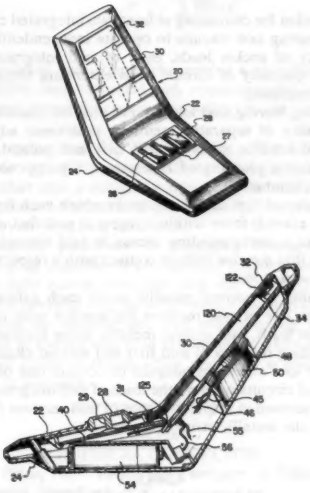


1. A package for operatively coupling at least two circuit boards in an electronic package, comprising:
a case defining an operating and viewing surface;
said case further defining an aperture having terminii respectively adjoining each of said circuit boards;
connector means having an elastomeric connector provided with conductors for electrically connecting said circuit boards; and
fastener means for compressing said elastomeric connector within said aperture and between said circuit boards so that a mechanical connection is effected among said circuit boards and said case and an electrical connection is effected between said circuit boards.

4,364,619
INTERCONNECTION SYSTEM FOR PRINTED CIRCUIT BOARD DEVICES

Gayan Inayat-Khan, Inglewood, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Apr. 9, 1981, Ser. No. 252,557
Int. Cl.³ H05K 1/14; A63F 9/00
U.S. Cl. 339—17 F 16 Claims



1. In an electrical interconnection system, the combination comprising:
a first member having electrical components thereon and having at least a portion thereof generally rigid with a plurality of electrically conductive members on said rigid portion;
a second generally rigid member having a plurality of flexible finger-like projections;
a flexible printed circuit lamina secured to said second member and having a section thereof looped over said projections with a conductive portion on said lamina aligned with each of said projections;
means on each of said first and second members for aligning said first and second members in proximate relation with said conductive portions of said lamina urged by said finger-like projections into contact with said electrically conductive members; and
means for maintaining said first and second members in position relative to each other.

4,364,620
SOCKET FOR HOUSING A PLURALITY OF INTEGRATED CIRCUITS

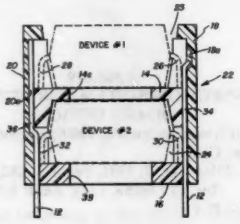
Wayne A. Mulholland, Plano; Robert J. Martin, Dallas, both of Tex.; David S. Wilson, Fort Collins, Colo., and Carlos Esparza, Jr., Lewisville, Tex., assignors to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US80/01139, § 371 Date Sep. 5, 1980, § 102(e) Date Sep. 5, 1980, PCT Pub. No. WO82/00923, PCT Pub. Date Mar. 18, 1982

PCT Filed Sep. 5, 1980, Ser. No. 261,236

Int. Cl.³ H01R *13/00*

U.S. Cl. 339—17 CF **10 Claims**



1. A socket for containing at least two integrated circuits and for connecting said circuits to operate independently through a plurality of socket leads, each of said integrated circuits having a plurality of circuit leads extending therefrom, the socket comprising:

a housing having first and second interior chambers;

a plurality of separator members positioned adjacent opposed interior walls of said first and second chambers forming a plurality of recesses on the opposed walls of said chambers;

a plurality of first metallic strips in which each first metallic strip extends from within a recess in said first chamber to within a corresponding recess in said second chamber, each first metallic strip in contact with a respective one of said socket leads;

a plurality of second metallic strips each extending from within one of said recesses for contact with one of said socket leads, said second metallic strips located in corresponding recesses of said first and second chambers; and

each of said chambers adapted to contain one of said integrated circuits wherein the leads of said integrated circuits are received in respective ones of said recesses for contact with the metallic strips therein.

4,364,621
ELECTRICAL CONNECTOR

Robert B. Janvrin, Climax, and Charles J. Bowden, Battle Creek, both of Mich., assignors to General Signal Corp., Stamford, Conn.

Filed Feb. 28, 1980, Ser. No. 125,602

Int. Cl.³ H01R *11/00*

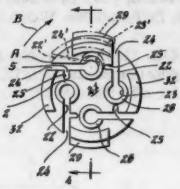
U.S. Cl. 339—59 M **9 Claims**

1. An apparatus for holding a plurality of electrical terminals comprising:

a body of molded insulating material adapted for receiving, supporting and fixedly holding a plurality of terminals in said body;

a plurality of openings in said body, each opening having (a) an axial passageway having a cross-sectional area substantially the same as the cross-sectional area of a terminal held therein and extending along the length of the body, each axial passageway having a collar mounted therein for fixedly holding a terminal inserted in the axial passageway, and (b) a radial passageway normally substantially smaller in cross-sectional than the axial passageway and extending outwardly from the axial passageway so that a terminal can be axially and radially inserted in and removed from the body of the connector; and

a plurality of hinges operatively joined to the body, each hinge being adjacent each axial collar and operable for enlarging the cross-sectional areas of the radial passageway and the



axial collar enough to accommodate the passage of a terminal having a cross-sectional area substantially the same as the cross-sectional area of the axial passageway in order to facilitate the insertion or removal of terminals within the axial collars provided therefor.

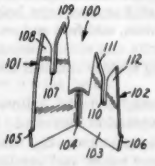
4,364,622
CONNECTOR FOR FLAT CABLE

Ted R. Huntley, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 9, 1980, Ser. No. 148,222

Int. Cl.³ H01R *4/24*

U.S. Cl. 339—97 R **9 Claims**



1. A connector comprising an insulating base, an insulating cover, and, fixed in said base, folded bi-level twin spring compression reserve U-contact elements having their two bifurcate contact members extending to different lengths in the same direction and from the same edge of a folded base and in planes at right angles to each other.

4,364,623
SOLDERLESS UNIVERSAL OUTLET

S. Scott Hammill, Mount Laurel, N.J., assignor to SGL Industries, Inc., Haddonfield, N.J.

Filed Sep. 23, 1980, Ser. No. 190,050

Int. Cl.³ H01R *13/11, 13/506, 21/06*

U.S. Cl. 339—126 RS **11 Claims**

1. An electrical receptacle comprising:

a receptacle body of electrical insulating material, and including a face part and a rear part;

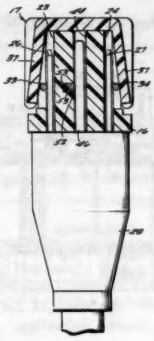
means defining first and second parallel, spaced, elongated prong-receiving slots in said receptacle body face part, said slots open along the opposite sides of said body face part;

means defining first and second grooves in said body face part sides, each of said grooves substantially perpendicular to the direction of elongation of said first and second slots, and said first groove intersecting said first slot, and said second groove intersecting said second slot;

conductor means for providing electrical connection with an electrical plug prong inserted into each of said prong-receiving slots, said conductor means consisting of first and second conductor wires, each having a bare portion thereof at the

area of intersection of said first groove with said first slot; and said second wire received by said second groove and having said bare portion thereof at the area of intersection of said second groove with said second slot;

said receptacle body rear part including a resilient portion



thereof engaging said first and second conductor wire bare portions and resiliently biasing them into intersecting relationship with said respective prong-receiving slots; and

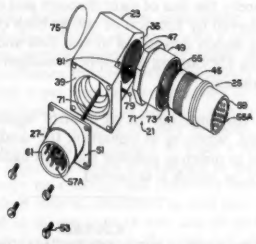
attaching means for attaching said receptacle body face and rear parts together with said rear part resilient portion engaging and biasing said conductor wire bare portions.

4,364,624

ADAPTER ASSEMBLY FOR ELECTRICAL LEADS

Robert A. Williams, 55 Bounty Rd., E., Fort Worth, Tex. 76116

Filed Apr. 14, 1978, Ser. No. 896,390
Int. Cl.³ H01R *11/00*
U.S. Cl. 339—154 R **2 Claims**



1. An adapter assembly comprising:

a body formed of metal,

a first opening extending through said body in a first direction,

said first opening having first and second ends on opposite sides of said body,

a second opening extending into said body in a second direction transverse to said first direction and intersecting said first opening,

first electrical connector means having a plurality of electrical terminals at one end adapted to be coupled to said first end of said first opening of said body,

second electrical connector means having a plurality of electrical terminals at one end adapted to be coupled to said second opening,

a plurality of electrical leads adapted to be coupled to said electrical terminals of said first and second electrical connectors and routed between said electrical terminals of said first and second electrical connectors through the passageway formed by said first and second openings,

said second end of said first opening being employed to facilitate connection and routing of said electrical leads to said terminals of said first and second electrical connectors, and

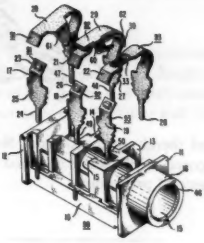
a metallic closure member adapted to be press fitted in said second end of said first opening for closing said second end of said first opening.

4,364,625

ELECTRICAL JACK ASSEMBLY

Paul A. Baker, Columbus, and John W. Hoell, Reynoldsburg, both of Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 12, 1980, Ser. No. 158,795
Int. Cl.³ H01R *17/18*
U.S. Cl. 339—183 **14 Claims**



1. An electrical jack adapted to receive a plug having tip, ring and sleeve members, said jack comprising tip, ring and sleeve spring assemblies each including a pair of break contacts;

said ring spring assembly also including a first and second movable spring element in electrical engagement with each other and a stationary spring element in electrical engagement with said first spring element when said plug is removed from said jack; and

each assembly positioned to engage a correspondingly named plug member to actuate said contacts when said plug is fully inserted into said jack; and

one of said movable ring spring elements adapted to engage said plug tip member and said sleeve spring assembly adapted to engage said plug ring member while maintaining said contacts closed when said plug is partially inserted in said jack.

4,364,626

ELECTRICAL CONNECTOR

Edison A. Price, New York, N.Y., assignor to Edison Price Incorporated, New York, N.Y.

Filed Mar. 7, 1980, Ser. No. 128,167
Int. Cl.³ H01R *13/64*
U.S. Cl. 339—184 M **9 Claims**

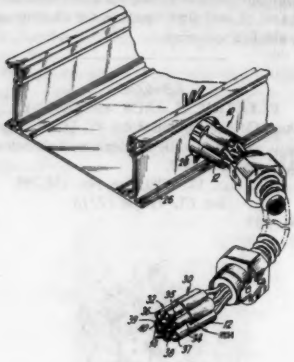
1. An electrical connector comprising:

a substantially cylindrical insulative housing comprising a base and a plurality of tubular projections extending axially from the base and including one central projection having a first axial extent and an equal number of first and second projections surrounding the central projections in a circle and having a second axial extent greater than that of the central projection, the first and second projections being configured and positioned so that all of the second projections of the housing are receivable in the first projections of a like housing;

a plurality of elongated conductive connector contacts;

and means axially mounting one contact in each projection with one end of each in the base, wherein the other end of each contact in the first and second projections terminates short of the second axial extent and is thereby not exposed

and the other end of the contact in the central projection has an axial extent which is greater than that of the other contacts and terminates between the first and second axial



extents and thereby projects from the central projection and is exposed while being shielded by the surrounding first and second projections.

4,364,627

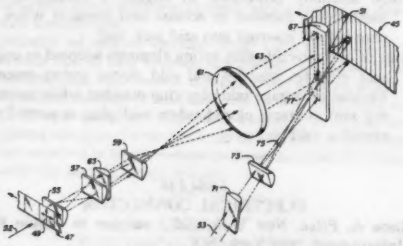
METHOD AND SYSTEM FOR CONSTRUCTING A COMPOSITE HOLOGRAM

Kenneth A. Haines, Santa Clara, Calif., assignor to Eidetic Images, Inc., Elmsford, N.Y.

Filed Sep. 7, 1979, Ser. No. 73,181

Int. Cl.³ G03H *1/30, 1/24, 1/26*

U.S. Cl. 350—3.76 **31 Claims**



1. In a method of making a lenticular hologram composed of narrow elongated hologram elements positioned along a horizontal line with their long dimensions vertical, each of said elements recording an image of an object, an improved method of constructing an individual hologram element thereof, comprising the steps of:

obtaining a coherent radiation object beam that contains information of the object,

optically processing the vertical and horizontal aspects of said object beam such that vertical and horizontal aspects of the image come to focus at substantially different, finite surfaces,

directing said object beam onto a narrow elongated hologram detector, and

simultaneously directing onto said detector at a finite angle to the object beam a reference beam of radiation that is coherent with said object beam.

4,364,628

OPTICAL SIGHTS

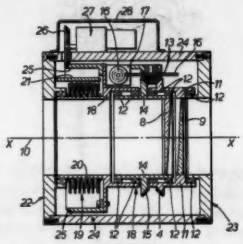
Frederick Garner, Thurcaston, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Sep. 5, 1980, Ser. No. 184,332

Claims priority, application United Kingdom, Sep. 5, 1979, 7930786

Int. Cl.³ G02B *23/02*

U.S. Cl. 350—500 **5 Claims**



1. A stabilisable optical sight suitable for use with a fighting tank gun control system which has gun barrel stabilisation apparatus including means for developing stabilisation error signals resulting from movement of the tank, and means for utilising the thus developed stabilisation error signals to drive the tank's gun barrel in elevation and the tank's gun turret in azimuth to provide the required stabilisation, said sight comprising:

an optical system with an eye piece, an objective lens, and a pair of serially-arranged optical wedges disposed between said eye piece and said objective lens on the optical axis of said optical system, said pair of optical wedges being mounted on first and second mounting means so as respectively to be rotatable about said optical axis both relatively one wedge with respect to the other and together, whereby the line of sight through said optical system may be moved by rotation of one or both of said wedges;

driving means connected to said first and second mounting means for causing said optical wedges to be so rotated in operation;

and

means for applying servo control signals to said driving means, whereby in operation the wedges may be so rotated in order to stabilise the sight against movement of a body on which it is carried.

4,364,629

OPERATION MICROSCOPE HAVING A SMALL WORKING DISTANCE

Walter H. Lang, and Franz Muchel, both of Konigsbronn, Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,968

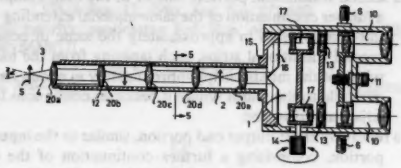
Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919678

Int. Cl.³ G02B *21/20*

U.S. Cl. 350—516 **13 Claims**

1. An operation-microscope kit, comprising a binocular viewing module having a viewing end and an objective-attachment end, said objective-attachment end being adapted for detachable connection to a conventional objective lens of relatively large diameter for operation upon object areas that are relatively exposed and uncluttered, an adapter module adapted for detachable connection to the objective-attachment end of said viewing module, said adapter module having a central region adapted for detachable connection to an objective-lens mount of reduced diameter substantially less than said large diameter and said adapter module having prism means for folding the binocular-viewing axes to within the lesser-

diameter capacity of said central region, and one or more objective-lens modules of substantially said reduced diameter



and adapted for detachable connection to each other and to said objective-lens mount in end-to-end relation.

4,364,630

AUTOMATIC FOCUSING DEVICE FOR MICROSCOPES

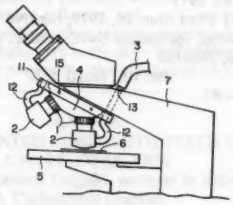
Toshimi Hayasaka, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 203,224

Claims priority, application Japan, Nov. 6, 1979, 54-153246[U]

Int. Cl.³ G02B *7/11*

U.S. Cl. 350—518 **9 Claims**



1. An automatic focusing device comprising a rotatable objective lens switching device equipped with a plural number of objective lenses, nozzles respectively arranged in the vicinity of said objective lenses and couplers respectively connected to said nozzles; and a gas feed tube connectable to any one of said nozzles through said any one of said couplers to supply gas into said any one of said nozzles thereby to focus, said automatic focusing device being adapted in such a manner that when one of the objective lenses is switched to another to be used for microscopy by rotating said objective lens switching device, said gas feed tube is connected to said any one of said nozzles, arranged in the vicinity of any one of said objective lenses to be used for microscopy through any one of said couplers, whereby the gas supplied through said gas feed tube passes through said any one of said couplers and is injected from said any one of said nozzles arranged in the vicinity of any one of said objective lenses to be used for microscopy to bring said any one of said objective lenses to be used for microscopy in focus condition.

4,364,631

CATADIOPTRIC DEVICE INTENDED FOR AN OPTICAL RESPONDER

Patrick Arondel, and Jean P. Lepeytre, both of Paris, France, assignors to Thomson - CSF, Paris, France

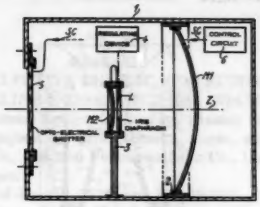
Filed Sep. 24, 1980, Ser. No. 190,380

Claims priority, application France, Oct. 5, 1979, 79 24890

Int. Cl.³ G02B *17/06*; H04B *9/00*

U.S. Cl. 350—503 **4 Claims**

1. A catadioptric device comprising a concave spherical mirror of radius R1 and whose optical axis passes through its center of curvature, a convex spherical mirror of radius R2=R1/2, whose optical axis coincides with that of the concave mirror to constitute the optical axis of the device and which faces said concave mirror at a distance from the latter which is at the most equal to the value R2 and is substantially equal to the said value for correcting the spherical aberration, means defining an optical pupil in a plane orthogonal to said axis and centered on the center of curvature of said concave



mirror, said means constituiting both an entrance and an exit pupil for the device, and regulatable diaphragm means for regulating the field of the device and positioned in the vicinity of the convex mirror between the latter and the concave mirror.

4,364,632

VERTICAL MICROSCOPE SLIDE

Joel F. Pullen, Rte. 1, 83B Lupine La., Templeton, Calif. 93465

Filed Jan. 12, 1981, Ser. No. 224,047

Int. Cl.³ G02B *21/34*

U.S. Cl. 350—536 **4 Claims**

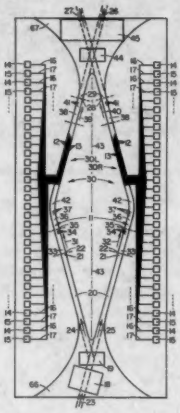
1. A rectangular microscope slide mounted from a single piece of clear material and containing a specimen envelope consisting of a base portion of uniform thickness, a platform portion located on, extending outwardly from and completely surrounded by said base portion, said platform portion having an upper transverse edge extending laterally outwardly from said base portion at essentially right angles, and a cavity of uniform thickness having a shape defined by the shape of said platform portion said cavity having an open upper end extending through the transverse laterally extending upper edge of said platform, said cavity having a front wall of uniform thickness and sidewalls formed from said platform portion and a rear wall of uniform thickness defined by said base portion.

4,364,633

PAIRWISE COMPARISON DEVICE

Carl M. Verber, and Richard P. Kenan, both of Columbus, Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Filed Mar. 14, 1980, Ser. No. 130,329
Int. Cl.[3] G02B 5/172
U.S. Cl. 350—96.14 19 Claims



2. Apparatus for comparing first and second sets of voltages having one-to-one correspondence, and providing an indication responsive to the magnitudes of the pairwise differences of the voltages; comprising

a plurality of channel waveguides, each having a first electrode on one side of the channel and a second electrode on the opposite side of the channel;

means for connecting each voltage of the first set to the first electrode of one waveguide;

means for connecting each voltage of the second set to the second electrode of the waveguide to the first electrode of which the corresponding voltage of the first set is connected;

means for directing to the input end of each waveguide a substantially plane wave of coherent light having predetermined relative intensity and phase; and

means responsive to the light emerging from the output end of the waveguides for providing an indication that is a function of the pairwise relative magnitudes of the first set of voltages and the second set of voltages, and

wherein the channel waveguides, electrodes, voltage connecting means, and light directing means comprise a device for guiding the input wave of coherent light, segmenting it into a plurality of waves, and reassembling them into a single output wave that may be similar to the input wave or may have a phase shift pattern imposed upon it; comprising

a thin film waveguide whose width is relatively broad at its input end, positioned to receive the input wave; comprising

a relatively short input end portion comprising a continuous region of thin material, having a relatively high index of refraction and of substantially uniform width, extending in a predetermined direction;

a first longer transitional portion comprising a continuation of the same material extending from the input end portion in approximately the same direction in a plurality of narrower first transitional strips of which adjacent ones are contiguous at the input end, each strip tapering away from the adjacent strips approximately as a long, narrow parabola to a substantially narrower width at its other end;

a middle portion comprising a further continuation of the same material extending from the narrower ends of the first transitional strips in approximately the same direction, at least for a substantial length, in still longer middle strips of substantially uniform width and spacing;

a second transitional portion, similar to the first, comprising a further continuation of the same material extending from the middle strips in approximately the same direction in second transitional strips, each tapering from the narrow width of the middle strips approximately as a long narrow parabola to the width where it becomes contiguous to the adjacent strips; and

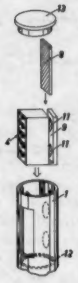
a relatively short output end portion, similar to the input end portion, comprising a further continuation of the same material in a continuous region extending from the second transitional portion in approximately the same direction.

4,364,634

REFLECTION DEVICE FOR ROADSIDE MARKING

John Björlund, Södra Vägen 93, Göteborg, Sweden (412 54)

PCT No. PCT/SE79/00061, § 371 Date Nov. 22, 1979, § 102(e) Date Nov. 20, 1979, PCT Pub. No. WO79/00809, PCT Pub. Date Oct. 18, 1979
PCT Filed Mar. 20, 1979, Ser. No. 187,844
Claims priority, application Sweden, Mar. 22, 1978, 7803272; May 30, 1978, 7806183
Int. Cl.[3] G02B 5/12
U.S. Cl. 350—97 9 Claims



1. In a reflective road marker of the type including a reflector supported at a specified height above the road, said reflector being removably carried by tubular means on a post beside the road, the improvement comprising:

said reflector being supported by said post for reflection of light, directed thereat, generally toward a first direction, being held behind said tubular means within said post and being removable from said post;

said tubular means being insertable into said post through an opening therein to a position where it at least substantially is received within said post, and including a plurality of channels, each channel

(1) having its length in said first direction;

(2) being closed at one end by said reflector and coacting therewith to define a stationary air cushion in front of said reflector;

(3) having its length at least one-half the maximum internal transverse dimension; and

(4) having a length-to-transverse-dimension ratio such that a visually roadside marking reflection effect of the incident light from the headlights of vehicles is provided at different positions on the road.

4,364,635

SLIDE-SCREEN FOR BACK PROJECTION

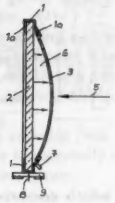
Horst Stief, 13, Gerhart-Hauptmann Strasse, D-4800 Bielefeld 1, Fed. Rep. of Germany

Filed Jun. 12, 1981, Ser. No. 272,843

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1980, 8015655[U]

Int. Cl.[3] G03B *21/56*

U.S. Cl. 350—125 16 Claims



1. In a slide-screen for back projection, having a frame and a projection surface arranged within said frame, the improvement which comprises that the projection surface is double-skinned and consists of:

(i) a curved translucent partition which lets through light rays coming from a reflector, and

(ii) a natural or synthetic glass viewing screen which reflects the impinging light rays in the direction of the translucent partition while preventing the dissipation of light.

4,364,636

HELMET MOUNTED SIGHT WITH FIXED DISPLAY AND PIVOTAL ARM

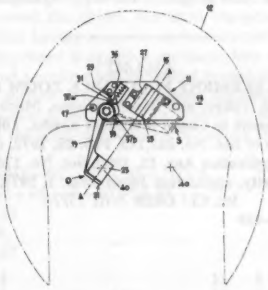
Stafford M. Ellis, Sussex, England, assignor to Elliott Brothers (London) Limited, Chelmsford, England

Filed Oct. 31, 1980, Ser. No. 202,710

Claims priority, application United Kingdom, Nov. 9, 1979, 7938918

Int. Cl.[3] G02B *27/10*

U.S. Cl. 350—174 3 Claims



1. A sight for an headgear comprising a mount member adapted to be secured to the headgear, an arm member pivotally connected to the mount member, a collimating sight carried by the arm member, and a substantially flat display surface a virtual image at infinity of which is to be formed by the collimating sight and in which the arm is pivotal between an operative position at which when the headgear is being worn the sight intercepts the wearer's forward line of sight to the distant scene and a stowed position at which the sight does not intrude into the wearer's field of view to the forward distant scene, and no part of the arm or the sight has a transverse dimension greater than a prescribed human interpupillary distance, wherein the said display surface is fixedly secured to the mount member said that only when the arm is at the operative position the sight defines an optical axis which intercepts the display surface perpendicular thereto.

4,364,637

HIGHLY REFLECTIVE PLASTIC REFLECTOR WITH CRYSTALLINE INORGANIC FILM COATING

Akira Ohno; Shitomi Katayama; Susumu Senaha; Suizo Kyo, and Akira Akagami, all of Yokohama, Japan, assignors to NHK Spring Co., Ltd. and Yokohama Kiko Co., Ltd., both of Kanagawa, Japan

Filed Jun. 13, 1979, Ser. No. 48,312

Claims priority, application Japan, Jun. 13, 1978, 53-70399; Jun. 13, 1978, 53-70400

Int. Cl.[3] G02B *1/10, 5/08;* B05D *302*

U.S. Cl. 350—288 6 Claims

1. A reflector comprising a light-reflecting metallic film vacuum coated on one or more sides of a molded body of polymeric material or a composite thereof, with the surface of said body formed of a thermosetting resin devoid of volatile components, and a light-transmissible crystalline film of an inorganic material selected from the group consisting of a metal oxide, an oxide of an amphoteric element and a mixture thereof vacuum coated on said light-reflecting metallic film.

4,364,638

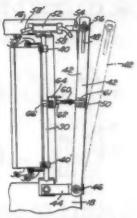
SIDE VIEW MIRROR PIVOTING ASSEMBLY FOR A VEHICLE

Ralph E. Pierce, III, Foster, R.I., assignor to Truck Repair Service, Inc., Warwick, R.I.

Filed Feb. 20, 1981, Ser. No. 236,131

Int. Cl.[3] G02B *5/08*

U.S. Cl. 350—289 3 Claims



1. A side view mirror pivoting assembly for a vehicle wherein a mirror support bracket is pivotally mounted to a door frame of a vehicle, said bracket supporting an elongated mirror thereon, the improvement for pivoting the bracket comprising a motor mounted on the door frame and having a reciprocating rod, said motor having means therein to produce linear motion of said rod,

an arm having one end coupled to said rod, the other end of the arm pivoted to the door frame at a point spaced from said rod,

a linkage connected at one end thereof to an intermediate portion of said arm and at the other end thereof to said bracket,

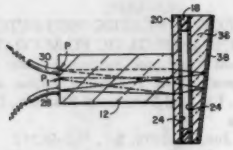
whereby upon linear movement of the reciprocating rod the arm will rock and the linkage will rock the bracket and the mirror attached thereto.

4,364,639

VARIABLE ATTENUATION ELECTRO-OPTIC DEVICE

William J. Sinclair, Nepean; Josef Straus, and Philip M. Garel-Jones, both of Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 25, 1980, Ser. No. 181,173
Int. Cl.³ G02F 1/13
U.S. Cl. 350—331 R 8 Claims



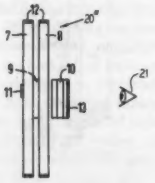
1. An electro-optic device comprising a graded refractive index lens for collimating input light at a liquid crystal cell and for focussing output light from the cell, the cell having a film of liquid crystal material flanked by first and second conducting films for applying an electric field across the liquid crystal to alter its optical transmissivity, and a reflector on a side thereof remote from the lens for reflecting input light propagating through the cell back through the lens.

4,364,640

ARRANGEMENT FOR BRIGHTNESS GAINS OF PASSIVE DISPLAY UNITS

Hans Krüger, Munich, and Karl-Heinz Walter, Grafing, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 23, 1980, Ser. No. 162,161
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1979, 2927100
Int. Cl.³ G02F 1/133
U.S. Cl. 350—345 4 Claims



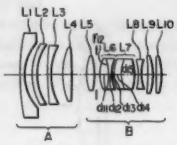
1. A device for capturing, guiding and concentrating light for coupling out of an outlet window comprising a first flexible foil of a synthetic material containing a fluorescent substance for converting ambient light into polarized fluorescent light of a first direction, a second foil of synthetic material containing a fluorescent substance for converting ambient light into polarized fluorescent light of a second direction being arranged parallel to the first foil with said first and second directions extending at right angles to each other, an optical active layer interposed between said first and second foil for rotating the direction of polarization by 90°, and means for forming an outlet window for the fluorescent light being disposed on an outer surface of one of said first and second foils facing away from the direction of viewing and being aligned with said optical active material.

4,364,641

WIDE ANGLE ZOOM LENS

Satoshi Mogami, Kodaira, Japan, assignor to Nippon Kogaku K.K., Japan

Filed Dec. 12, 1980, Ser. No. 215,752
Claims priority, application Japan, Dec. 28, 1979, 54-172197
Int. Cl.³ G02B 15/16
U.S. Cl. 350—426 4 Claims



1. A zoom lens which comprises, in succession from the object side, a divergent lens group (A) and a convergent lens group (B) and whose magnification is changed by relative movement of the two groups and wherein the divergent lens group (A) comprises four lenses, i.e., in succession from the object side, three continuous negative meniscus lenses (L_1, L_2, L_3) having their respective convex surfaces facing the object side and a positive lens (L_4) having its surface of sharper curvature facing the object side and the convergent lens group (B) comprises, in succession from the object side, a single biconvex positive lens (L_5), a meniscus lens (L_6) comprising a doublet and having its convex surface facing the object side, a positive lens (L_7), a negative lens (L_8) and two continuous positive lenses (L_9, L_{10}), the zoom lens satisfying the following conditions:

(I) $r_1 > 3.4f_W$

(II) $0.9|f_A| < |f_{11}| < 1.3|f_A|$ ($f_{11}<0, f_A<0$)

(III) $0.9f_W > d_{11}+d_{12}+d_{14}+d_{15} > 0.6f_W$

(IV) $1.6f_W > |r_{12}| > 0.8f_W$ ($r_{12}<0$)

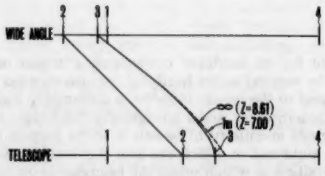
where f_A represents the focal length of the divergent lens group (A), f_{11} represents the focal length of the negative meniscus lens (L_1) which is most adjacent to the object side, r represents the curvature radii of the lens surfaces, d represents the thicknesses of the lenses and the air spaces between the lenses, the subscripts represent the order from the object side, and f_W represents the focal length of the entire system at the wide angle end.

4,364,642

ZOOM ELEMENT FOCUSABLE ZOOM LENS

Kazuo Tanaka, Tokyo, and Ryusho Hirose, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 882,115, Feb. 28, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 176,570
Claims priority, application Japan, Mar. 1, 1977, 52-21889
Int. Cl.³ G02B 7/10, 15/16
U.S. Cl. 350—429 2 Claims



1. A zoom lens comprising:

first and second fixed lens groups both unmovable during zooming and during focusing, first and second movable

lens groups both arranged between the first fixed lens group and the second fixed lens group, said first movable lens group being movable during zooming and during focusing, and said second movable lens group being movable during zooming,

first detection means for detecting the distance which the first movable lens group departs from a predetermined standard position in a first lens condition,

second detection means for detecting the distance which the second movable lens group departs from the predetermined standard position,

third detecting means for detecting the distance which the first movable lens group departs from the predetermined standard position in a second lens condition when the first movable lens group is moved for focusing from the first lens condition, and

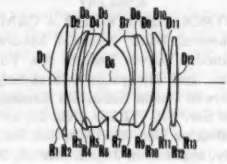
means for determining a movable path for the first movable lens group in response to externally caused movement of the second movable lens group.

4,364,643

LARGE APERTURE RATIO PHOTOGRAPHIC LENS

Kikuo Momiyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1980, Ser. No. 153,861
Claims priority, application Japan, May 30, 1979, 54-67047
Int. Cl.³ G02B 9/62, 11/32
U.S. Cl. 350—464 **4 Claims**



1. A large aperture ratio photographic lens comprising: six lens components the first component consisting of a positive meniscus lens having a convex plane toward the object, the second component a positive meniscus lens having a convex surface toward the object, the third component a negative meniscus lens having a convex surface toward the object, the fourth component a negative meniscus lens consisting of a negative and a positive lens cemented to each other and having a convex surface toward the image, the fifth component a positive meniscus lens having a convex surface toward the image and the sixth component a bi-convex lens, wherein the conditions:

(1) $1.75<(N1+N2+N5+N6+N7)/5$
(2) $(\nu1+\nu2+\nu5+\nu6+\nu7)/5>45.$
(3) $1.85<n6$
(4) $\nu4<26.$
(5) $n3<1.67$

$$0.34f < \frac{R6 + |R7|}{2} < 0.37f,\ R7 < 0 \qquad (6)$$

(7) $0.30f<D6<0.35f$
(8) $0.4/f<|\phi4+\phi5|<0.6/f,\ \phi4+\phi5<0$
(9) $0.68f<|R11|<0.73f,\ R11<0$

wherein:

f is the focal length of the whole lens system

Ri is the radius of curvature of the i-th surface

Di is the distance between the i-th and (i+1)th surface

Ni is the refractive index of the i-th lens

νi is the Abbe number of the i-th lens

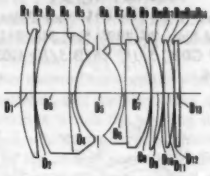
ϕi is the refracting power of the i-th surface.

4,364,644

GAUSS TYPE LARGE APERTURE PHOTOGRAPHIC OBJECTIVE

Keiji Ikemori, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 209,493
Claims priority, application Japan, Nov. 27, 1979, 54-153258
Int. Cl.³ G02B 9/62, 13/18
U.S. Cl. 350—464 **1 Claim**



1. A Gauss type large aperture photographic objective comprising eight elements of which:

the first is a positive meniscus lens of convex curvature toward the front,

the second is a positive lens of convex curvature toward the front,

the third is a negative lens of concave curvature toward the rear,

the fourth is a negative lens of concave curvature toward the front,

the fifth is a positive lens of convex curvature toward the rear,

the sixth is a positive meniscus lens of convex curvature toward the rear,

the seventh is a bi-convex positive lens with its rear surface of stronger curvature, and

the eighth is a positive lens,

said second and third lenses being cemented together,

said fourth and fifth lenses being cemented together,

the first surface of said second lens being aspherical, its aspherical configuration being such that as the distance from the optical axis increases, the deviation of the surface from the spherical surface of paraxial radius of curvature increases toward the front, and said objective being characterized by satisfying the following conditions:

$$1.24 < \frac{D3 + D4}{D6 + D7} < 1.4 \qquad (1)$$

$$1 < \frac{L}{f} < 1.1 \left(L = \sum_{i=1}^{13} Di \right) \qquad (2)$$

$$1.78 < \frac{N1 + N2 + N5 + N6 + N7}{5} < 1.89 \qquad (3)$$

$$2.17 < \frac{f}{R5} < 2.56 \qquad (4)$$

$$2.44 < \frac{f}{|R6|} < 2.7 \qquad (5)$$

$$f6 < f7 < f8 \qquad (6)$$

$$0.08 < n2 - n3 < 0.22 \qquad (7)$$

$$0.1 < \frac{f}{R4} < 0.5 \qquad (8)$$

wherein

R1, R2, . . . , R14 are the radii of curvature of the various lens surface,

D1, D2, . . . , D13 are the axial thicknesses of the various lenses and the axial separations between the successive lenses,

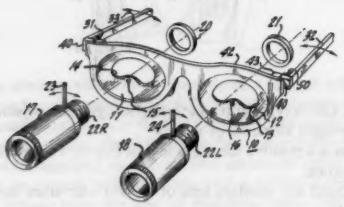
N1, N2, . . . , N8 are the indices of refraction of the various lenses (d-line),
$\nu 1, \nu 2, \ldots, \nu 8$ are the Abbe numbers of the various lenses,
f is the focal length of the entire system,
f6, f7 and f8 are the focal lengths of the 6th, 7th and 8th lenses respectively.

4,364,645

ADJUSTABLE FRAME APPARATUS FOR TELESCOPIC SPECTACLES

William Feinbloom, P.O. Box 411, New Paltz, N.Y. 12561

Filed Nov. 28, 1980, Ser. No. 211,468
Int. Cl.³ G02C *5/14*; A61B *3/10*; G03B *1/58*
U.S. Cl. 351—204 **10 Claims**



1. A trial frame for enabling prescribed measurements for spectacles used to compensate for vision defects in a handicapped user, comprising:

(a) a spectacle frame having at least one test carrier lens emplaced in the eyepiece of said frame, said lens including an elongated aperture of a length selected to provide a given range manifesting average interpupillary distances associated with a user, and

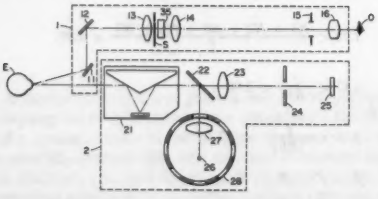
(b) a telescopic assembly positioned in said aperture to enable a practitioner to move said assembly within said aperture when said frame is accommodated on the face of said user to determine said interpupillary distance of said user.

4,364,646

POSITION ADJUSTING DEVICE FOR OPHTHALMOLOGIC INSTRUMENT

Masao Nohda, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,846
Claims priority, application Japan, Mar. 13, 1979, 54-31221[U]
Int. Cl.³ A61B *3/10*
U.S. Cl. 351—208 **10 Claims**



1. A position adjusting device attached to an ophthalmologic measuring instrument to accurately position an eye to be examined with respect to the ophthalmologic measuring instrument, said device comprising:

(a) first projection means for projecting a predetermined projection pattern upon the eye to be examined;

(b) an objective lens group for forming therethrough the reflected image of said projection pattern by the cornea of said eye to be examined;

(c) a field stop provided at the image forming position of said objective lens group;

(d) a light-intercepting member provided near said objective lens group and having two openings outside of the optic axis of said objective lens group;

(e) a reflecting member obliquely disposed on the optic axis of said objective lens group rearwardly of and near said light-intercepting member;

(f) second projection means for projecting a standard chart image onto the position of said field stop through the reflection on said reflecting member so as to coincide the center of the standard chart image with the optical axis of said objective lens; and

(g) an eyepiece for observing the image of said projection pattern and the image of said standard chart both formed at the position of said field stop;

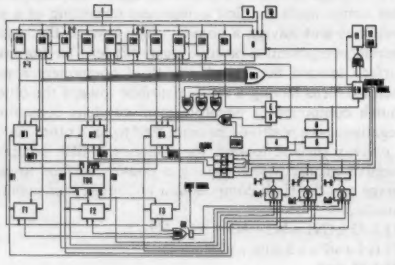
whereby the distance adjustment between said ophthalmologic measuring instrument and said eye to be examined is achieved by moving said measuring instrument relative to said eye so that dual images resulting from light rays passing through said two openings of said light-intercepting member respectively coincide with each other, and whereby the position adjustment of said ophthalmologic measuring instrument and said eye to be examined may be achieved by moving said measuring instrument relative to said eye so that the image of said projection pattern and the image of said standard chart are formed in a predetermined positional relation at the position of said field stop.

4,364,647

CONTROL DEVICE FOR A CAMERA

Masaharu Kawamura, Hino; Nobuaki Sakurada, Yokohama; Nobuhiko Shinoda, Tokyo; Tadashi Ito, Yokohama; Fumio Ito, Yokohama, and Hiroyashu Murakami, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 772,316, Feb. 25, 1977, abandoned.
This application Dec. 18, 1978, Ser. No. 970,237
Claims priority, application Japan, Mar. 4, 1976, 51-23500
Int. Cl.³ G03B *1/18, 17/24, 17/40*
U.S. Cl. 354—23 D **21 Claims**



1. A A photographic system for a camera comprising:

(A) a control device having:

(a) an information memory circuit for storing information for determining a time interval between camera release operations and for storing information of a number of release operations;

(b) a control circuit connected to the memory circuit, for forming a release signal at a certain determined time interval in accordance with the time interval information stored in the memory circuit, wherein said control circuit controls the number of release operations to be made in accordance with the number of the release signals produced from the control circuit and the release operation number information stored in the memory circuit;

said camera performing a shutter release operation and the

start of an exposure operation in response to the release signal; and

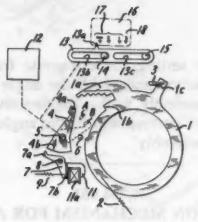
(B) a film winding device for winding a film after exposure operation is terminated.

4,364,648

SAFETY DEVICE OF AUTO-FOCUSING POINT ADJUSTING CAMERA

Kiyoshi Kitai, and Yuzuru Takazawa, both of Chiba, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Dec. 28, 1978, Ser. No. 973,808
Claims priority, application Japan, Dec. 29, 1977, 52-159269
Int. Cl.³ G03B 7/08
U.S. Cl. 354—25 **6 Claims**



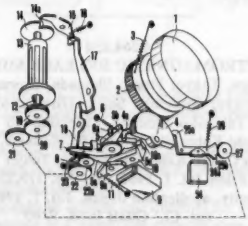
4. In an automatic focusing device for a camera lens having a movable focus adjustment member for focusing the lens and having a first cam thereon for defining a plurality of focusing positions, and latching means coactive with the first cam to select a focusing position in response to the receipt of a signal indicating a coincident auto-focusing point, the improvement comprising: a safety device for the automatic focusing device including a second cam on the focus adjustment member defining a pan focusing position corresponding to a predetermined pan focusing distance between zero and infinity; and wherein the latching means includes means coactive with the second cam when the signal indicating a coincident auto-focusing point is not produced to effect positioning of said focus adjustment member in the predetermined pan focusing position.

4,364,649

FILM WINDING AND LENS CONTROL MECHANISM FOR AUTOMATICALLY FOCUSING CAMERA

Toshiharu Mamiya, Kawasaki; Tateo Yamada, Yokohama; Michio Hirohata, Inagi; Yukio Ogawa, and Hiroyuki Kimura, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1980, Ser. No. 203,479
Claims priority, application Japan, Nov. 1, 1979, 54-142304
Int. Cl.³ G03B 3/00, 17/14
U.S. Cl. 354—25 **11 Claims**



1. A winding stop release device for the automatic focusing camera provided with an electromagnetically driven shutter comprising:

a photographing lens, said lens having a distance adjusting ring;

an urging means for driving the distance adjusting ring from the infinite position to the very near position respectively from the very near position to the infinite position;

a winding member;

a winding stop member for stopping the winding operation of the winding member, said member being brought into the winding stop position at the termination of the winding operation of the winding member;

a winding stop release member for moving the winding stop member from the winding stop position to the winding stop release position;

a control member inserted between the winding member and the charge member, said member being movable between the first position in which the winding stop release member is operated, while the charge member is released from the holding of the charge state to the second position in which the winding stop release member is made non-operative, while the charge member is kept in the charge state, whereby during the movement from the first position to the second position the winding power of the winding member is transferred to the charge member; and

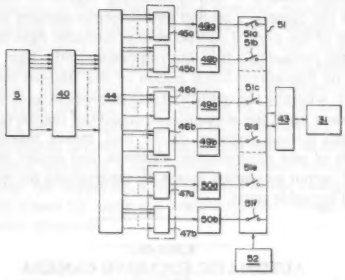
a magnet for keeping the control member in the second position, said magnet enabling the control member to move from the second position to the first position by means of controlling the current supply.

4,364,650

EXPOSURE CONTROL METHOD AND DEVICE

Takaaki Terashita; Kazuo Shiota, and Kenji Nakauchi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 3, 1980, Ser. No. 193,888
Claims priority, application Japan, Oct. 5, 1979, 54-128626
Int. Cl.³ G03B 7/08
U.S. Cl. 354—31 **3 Claims**



1. A method of controlling exposure based on the brightness of an object measured by light measuring means comprising steps of

arranging a number of light measuring elements in a light measuring area for measuring the brightness of the object the image of which is focused on said light measuring area, said light measuring elements outputing a signal representing the brightness measured thereby,

dividing said light measuring area into n-number of zones of a desired pattern, each zone including at least one of said light measuring elements,

obtaining an average brightness Bmi (i: address of the zone) of said zone by calculation based on the output signals of said light measuring elements,

obtaining the object brightness B by calculation based on said average brightness Bmi by use of a formula of

$$B = \sum_{i=1}^{n} K_{i+1} \cdot Bmi$$

where K^1 and K_{i+1} are coefficients,

controlling exposure based on the object of brightness B; and

dividing said light measuring area into different patterns of zones for different positions of the optical instrument to which the method is applied.

4,364,651

EXPOSURE ASCERTAINING DEVICE FOR CAMERAS

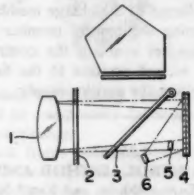
Fumiaki Hiraike, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Japan

Filed Apr. 7, 1981, Ser. No. 251,750

Claims priority, application Japan, Apr. 15, 1980, 55/48730; Apr. 15, 1980, 55/48731

Int. Cl.³ G03B 7/00

U.S. Cl. 354—31 2 Claims



1. In a camera having a plurality of movable, sequentially operable parts controlling the exposure of a film, the combination of a first photoelectric element positioned outside of the normal optical path of incident light impinging upon the surface of a film but responsive to that part of the incident light advancing toward a film-surrounding region of the film-set side of the camera, a second photoelectric element positioned outside of the normal optical path of incident light impinging upon the surface of a film, but responsive to the light reflected from the film-surrounding region of the film-set side of the camera, whereby the outputs of said photoelectric elements are dependent upon the sequential operation of the movable camera parts during exposure of the film, means measuring the outputs of said photoelectric elements, and means responsive to said output measuring means for ascertaining the movement of said movable parts.

4,364,652

AUTOMATIC FOCUSING CAMERA

Hiroshi Iwata, Nara, and Wataru Hasegawa, Sakai, both of Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed May 4, 1981, Ser. No. 260,112

Claims priority, application Japan, May 13, 1980, 55-63618

Int. Cl.³ G03B 13/22, 17/12

U.S. Cl. 354—197 5 Claims

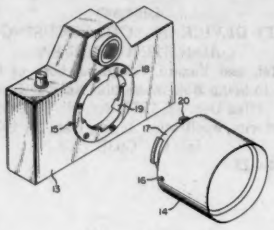
1. An ultrasonic transmitter for use in an ultrasonic ranging system for a camera capable of accepting various interchangeable lens assemblies having corresponding various angles of view, comprising:

an ultrasonic generator, the directivity of which varies with the ultrasonic frequency generated thereby;

a camera mount for receiving a selected one of said lens assemblies;

frequency determining means operatively associated with said camera mount and adapted to be coupled to said selected one of said lens assemblies when the selected assembly is received by said camera mount, for establishing a frequency control parameter corresponding to the angle of view of said selected lens assembly; and

ultrasonic frequency control means coupled to said ultrasonic generator and responsive to said frequency control



parameter for setting the ultrasonic frequency of said generator in accordance with the angle of view of said selected lens assembly, so that the directivity of said ultrasonic generator corresponds to the angle of view of said selected lens assembly.

4,364,653

FILM SUCTION MECHANISM FOR A CAMERA

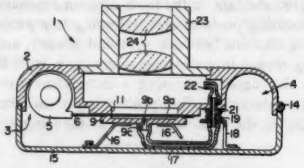
Katumi Terada, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Japan

Filed Sep. 8, 1981, Ser. No. 300,203

Claims priority, application Japan, Nov. 8, 1980, 55-160203[U]

Int. Cl.³ G03B 1/52

U.S. Cl. 354—203 13 Claims



1. A film suction mechanism for a camera, comprising a suction unit disposed with a camera body, a first suction path communicating with said suction unit and formed in said camera body, a film pressure plate mounted on a rear lid of said camera body and having film suction openings formed therein, and a second suction path formed in said rear lid and communicating with said film suction openings, said second suction path being arranged so that it is connected to said first suction path in response to closure of said rear lid, thereby establishing a fluid communication between the suction unit and said film suction openings.

4,364,654

ELECTROMAGNETIC RELEASE SHUTTER

Michio Senuma, Tokyo; Fumio Shimada, Kawasaki; Yoshihiro Shigeta, Tokyo; Syuichiro Saito; Hiroshi Aizawa, both of Kawasaki; Takehiko Ohniwa, Chichibu, all of Japan, and Canon Denshi Kabushiki Kaisha, 03, Saitama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo

Filed Jul. 1, 1981, Ser. No. 279,258

Claims priority, application Japan, Jul. 7, 1980, 55-92888

Int. Cl.³ G03B 9/08, 9/40

U.S. Cl. 354—234 10 Claims

1. An electromagnetic release shutter for a camera having shutter blades locked by locking members in a charged state and being arranged to expose a light-sensitive face to light by

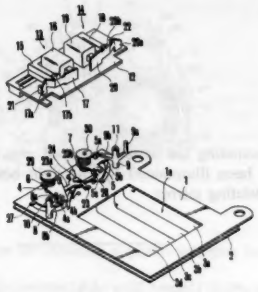
unlocking the shutter blades through the actions of electromagnets, comprising:

(a) first locking members, said members being capable of locking shutter blades in a charged state;

(b) a first releasing member, said member being capable of releasing said shutter blades from their states of being locked by said first locking members;

(c) second locking members, said members being capable of locking said shutter blades in a charged state; and

(d) second releasing members arranged in combination with electromagnets, said members being capable of releasing said



shutter blades by electromagnetic forces from their states of being locked by the second locking members to permit the shutter blades to travel, said second releasing members being arranged to be actuated after the shutter blades are released by the first releasing member from their states of being locked by the first locking members;

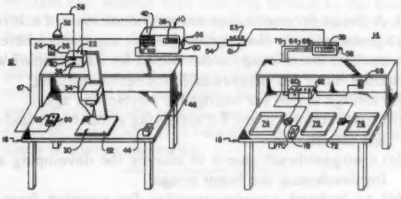
said second releasing members being armatures of electromagnets, said armatures being arranged to be driven by the electromagnets and to hit said second locking members after they have been displaced by the electromagnets to predetermined extents.

4,364,655

PHOTOGRAPHIC DARKROOM CONTROL SYSTEM WITH TIMING MEANS

Russell A. Parker, 162 Locust St., Holliston, Mass. 01746

Filed Feb. 19, 1981, Ser. No. 236,055
Int. Cl.³ G03D *3/00, 3/02*
U.S. Cl. 354—299 **30 Claims**



1. A process timing and controlling device system for use in photographic darkrooms involving multiple timing and control process steps comprising,

a control console, programmable in at least on channel to automatically run and step through substantially all timing and control process steps,

step timing means in at least one channel for counting down time remaining in a particular process step,

step timing indicator means in at least one channel for indicating time remaining in a particular process step,

means defining a power supply connecting a source of power with said console and said timing means which when activated supplies power to said console and timing means,

means for initiating a program step in at least one channel,

switching means in at least one channel for manually stepping through steps independently of the programmed time including means for interrupting a programmed timing step during automatic running thereof and means for advancing from the interrupted timing step to the subsequent program step,

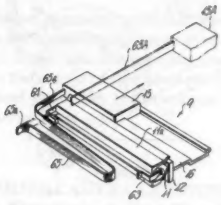
a plurality of relays for operating programmed timing and control functions, and relay driving means programmed to select an appropriate output to activate each said relay.

4,364,656

ELECTROPHOTOGRAPHIC COPYING MACHINE

Nobuyuki Yanagawa, Chigasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 11, 1980, Ser. No. 186,276
Claims priority, application Japan, Sep. 14, 1979, 54-118091
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 CH **20 Claims**



1. In an electrophotographic copying machine including a photosensitive member in the form of an endless belt having a portion which remains flat when the belt is at rest, a carriage disposed for reciprocating motion in parallel relationship with the flat portion of the photosensitive member, support means for supporting the carriage in a reciprocable manner, drive means for causing a reciprocating motion of the carriage, a charger mounted on the carriage for charging the photosensitive member by a corona discharge, an illumination unit mounted on the carriage for illuminating an original located in place, and a light transmitting device for transmitting an image of the illuminated original onto the photosensitive member; the improvement including a high tension generator mounted on the carriage for supplying a high tension to the charger and conductor means for supplying a relatively low voltage to said high tension generator.

4,364,657

MULTIPLE-BLADE PICKOFF FOR ELECTROPHOTOGRAPHIC COPIER

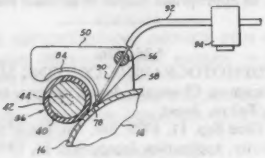
Benzion Landa, Alberta, Canada, assignor to Savin Corporation, Valhalla, N.Y.

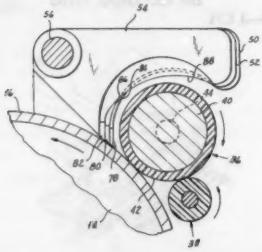
Filed Sep. 24, 1980, Ser. No. 190,351
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 SH **7 Claims**

1. In an electrophotographic copier having a photoconductor, means for forming a developed toner image on said photoconductor, and means for moving said photoconductor past said image-forming means, the improvement comprising a roller, means for positioning said roller across said photoconductor to form a nip, means for feeding a carrier sheet to said nip with a predetermined leading edge orientation to transfer said developed image to said sheet, means for directing a jet of gas against a leading edge portion of said carrier sheet as it emerges from said nip to lift the adjacent sheet portion from said photoconductor, a plurality of pickoff elements, and

means for positioning said pickoff elements at transversely spaced locations across said photoconductor at progressively retarded positions following said roller sequentially to receive the leading edge of said carrier sheet, whereby said leading edge loses said predetermined orientation, said elements having respective guide surfaces defining an arcuate path around said roller of such progressively changing curvature across said photoconductor as to restore said predetermined leading edge orientation.

6. In an electrophotographic copier having a photoconductor, means for forming a developed toner image on said photo-





conductor, means for supplying a carrier sheet to said photoconductor, and means for moving said photoconductor past said image-forming means and said sheet-supplying means, the improvement comprising means for directing a jet of gas against an edge portion of said carrier sheet to lift the adjacent sheet portion from said photoconductor, a roller, and means for positioning said roller in engagement with said sheet at such a location spaced approximately one centimeter from said edge portion as to entrap gas in the region beneath said adjacent sheet portion and substantially prevent escape of gas therefrom to cause the pressure of said gas to lift said sheet portion from said photoconductor.

4,364,658

SCANNING ILLUMINATOR

Susumu Seto, Odawara; Mitsuhiro Tokuhara, Chigasaki; Yukio Takemura, Kawasaki; Yu Yamada, Kokubunji, and Takeshi Kuwayama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 282,914

Claims priority, application Japan, Jul. 25, 1980, 55-102583

Int. Cl.³ G03G *15/28*

U.S. Cl. 355—8 **7 Claims**

1. A scanning illuminator comprising:

a first source of light fixed adjacent to one end of an original to be copied;

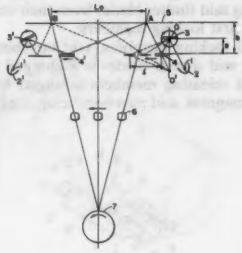
a first rotary mirror pivotable around a reflective point for reflecting the incident light from said first light source;

a first translating mirror for receiving the light beam from said first rotary mirror, said first translating mirror being moved substantially parallel to the original in synchronism with said first rotary mirror for illuminating said original in a slit-shape;

a second source of light fixed adjacent to the opposite end of said original;

a second rotary mirror pivotable around a reflective point for reflecting the incident light thereon from said second light source; and

a second translating mirror for receiving the light beam from said second rotary mirror, said second translating mirror being moved substantially parallel to said original in synchronism with said second rotary mirror for similarly



illuminating the same slit-shaped area on said original as has been illuminated by the light beam from said first translating mirror.

4,364,659

CONTROLLING TONER CONCENTRATION OF DRY DEVELOPING AGENT IN ELECTROPHOTOGRAPHY

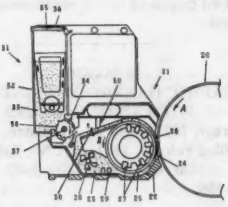
Nobutaka Noda, Kawasaki, Japan, assignor to Katsuragawa Electric Co., Ltd., Japan

Filed May 14, 1980, Ser. No. 149,715

Claims priority, application Japan, Jun. 1, 1979, 54-67535

Int. Cl.³ G03G *15/09*

U.S. Cl. 355—14 D **7 Claims**



1. A device for controlling toner concentration of a developing agent used in an electrophotographic apparatus wherein an electrostatic latent image is developed by a developing agent including toner and magnetizable carrier comprising:

(a) storage means for storing the developing agent;

(b) toner supply means for supplying a toner into said storage means;

(c) a magnet-brush sleeve to convey the developing agent for developing the latent image;

(d) an inclined scraping member for scraping from said magnet-brush sleeve the developing agent which has participated in the development of the image, so that the developing agent flows along an upper surface of said scraping member;

(e) detecting means spaced by a predetermined distance from said upper surface of said scraping member, said detecting means detecting the thickness of the flow of the developing agent dependent on whether or not said developing agent contacts said detecting means, and

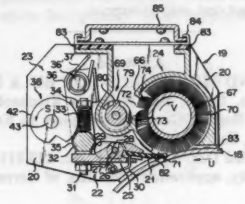
(f) means for metering toner from said toner supply means to said storage means when the developing agent is not in contact with said detecting means.

4,364,660

APPARATUS FOR AND METHOD OF CLEANING A PHOTO-SENSITIVE BODY WITH CLEANING BLADE BROUGHT GRADUALLY INTO CONTACT WITH BODY

Goro Oda, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 22, 1980, Ser. No. 152,313
Claims priority, application Japan, May 29, 1979, 54-65546; May 29, 1979, 54-65547; May 29, 1979, 54-65548
Int. Cl.³ G03G 21/00
U.S. Cl. 355—15 9 Claims



1. An apparatus for cleaning a photo-sensitive body, comprising:

a cleaning blade contractable with respect to the surface of the photo-aensitive body;

a drive mechanism for moving said cleaning blade to be contacted with the surface of said photo-sensitive body before the start of the operation of said photo-sensitive body and to subsequently cause the contact pressure applied to the surface of said photo-sensitive body by said cleaning blade in contact therewith to be gradually increased in an initial stage of the operation of said photo-sensitive body; and

a blade holding mechanism holding said cleaning blade and capable of being driven by said drive mechanism to move said cleaning blade with respect to the surface of said photo-sensitive body;

said blade holding mechanism including a support body carrying said cleaning blade mounted thereon, a biasing member biasing said support body in the direction away from the surface of said photo-sensitive body, and a roller rotatably provided on said support body,

said drive mechanism including a cam mechanism for moving said cleaning blade toward the surface of said photo-sensitive body against the biasing force of said biasing member, said cam mechanism including a cam member having a cam surface, said roller being capable of being brought into contact with said cam surface by the biasing force of said biasing member, said cam surface having a first portion serving to separate said cleaning blade from the surface of said photo-sensitive body, a second portion serving to bring said cleaning blade into contact with the surface of said photo-sensitive body and a third portion serving to gradually increase the contact pressure applied to the surface of said photo-sensitive body by said cleaning blade in contact therewith.

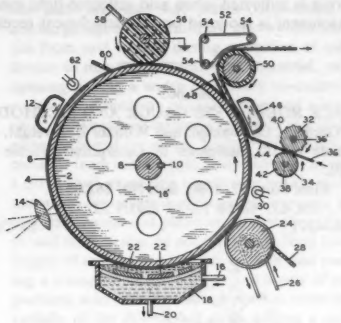
4,364,661

PROCESS AND APPARATUS FOR TRANSFERRING DEVELOPED ELECTROSTATIC IMAGES TO A CARRIER SHEET, IMPROVED CARRIER SHEET FOR USE IN THE PROCESS AND METHOD OF MAKING THE SAME

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Filed May 13, 1980, Ser. No. 149,539
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 SH 9 Claims

1. A method of electrophotography including the steps of forming a latent electrostatic image on a photoconductive surface, developing the image on said surface with charged toner particles, providing a carrier sheet having a generally smooth surface with dispersed spacing means formed in situ on said surface, said spacing means having a height appreciably greater than the height of said developed image, positioning



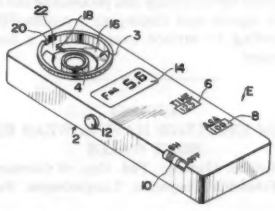
said spacing means in contact with said photoconductive surface to form a gap between said carrier sheet and the surface of said developed image, and then applying a potential of a polarity opposite to the charge of said toner particles to the back of said carrier sheet to transfer the developed image across said gap to said carrier sheet.

4,364,662

DUAL MODE CAMERA EXPOSURE METERS

Yoshio Yuasa, Kawachinagano; Toru Kisanuki, Toyokawa, and Susumu Shirai, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 16, 1980, Ser. No. 150,643
Claims priority, application Japan, Jun. 5, 1979, 54-76928[U]
Int. Cl.³ G01J 1/44
U.S. Cl. 356—225 8 Claims



1. An exposure meter usable as an incident light meter and as a reflected light meter by selective use of an incident-light measuring attachment and a reflected-light measuring attachment, comprising:

attachment receiving means for selectively receiving said incident-light measuring attachment and said reflected-light measuring attachment;

means for receiving light passed through the attachment mounted on said attachment receiving means to give an output in response to intensity of received light;

means for processing at least the output of said light receiving means to obtain exposure information;

means for indicating exposure information in response to the information obtained by said processing means;

means for generating signals in dependence upon the attachment mounted on said attachment receiving means; and

means for selecting between indication by incident light measuring and indication by reflected light measuring in

response to the signals generated by said means for generating;

whereby, the exposure information for incident light measuring is indicated when said incident-light measuring attachement is mounted on said attachment receiving means, and the exposure information by reflected light measuring is indicated when said reflected-light measuring attachment is mounted on said attachment receiving means.

4,364,663

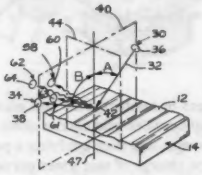
SURFACE ROUGHNESS GAUGE AND METHOD

Chester S. Gardner, Champaign, and William E. Streight, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 17, 1980, Ser. No. 262,057

Int. Cl.³ G01B *11/30*; G01N *21/55*

U.S. Cl. 356—371 **18 Claims**



1. A surface roughness gauge (**10**) comprising:

first means (**30**) for directing a light beam (**32**) directly upon a surface (**12**) of an article (**14**) to be measured;

second means (**34**) for providing a first signal proportional to the specular light reflected from the surface (**12**), the first and second means (**30,34**) defining a common plane (**40**);

third means (**58**) for providing a second signal proportional to the diffused light reflected from the surface (**12**) in the common plane (**40**);

fourth means (**61**) for providing a third signal proportional to the diffused light reflected from the surface (**12**) to the side of the common plane (**40**); and

fifth means (**24**) for receiving and processing the first, second and third signals and displaying a reading (**26**) directly corresponding to surface roughness in a linear unit of measurement.

4,364,664

DUAL WORM EXTRUDER HAVING WEAR RESISTANT BORE WALLS

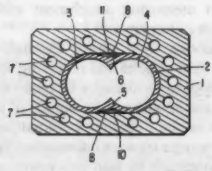
Friedrich Theysohn, Hanover, Fed. Rep. of Germany, assignor to Firma Friedrich Theysohn, Langenhagen, Fed. Rep. of Germany

Filed Mar. 12, 1981, Ser. No. 243,149

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 3010659

Int. Cl.³ A21C *1/06*; B30B *3/04*

U.S. Cl. 366—84 **6 Claims**



1. In a dual worm extruder including a worm housing having an inner wall defining a cavity; and a wear resistant insert accommodated in said cavity; said insert having two parallel extruder bores defining, when viewed together in cross section, passages of circular areas having an overlap; said insert having an outer surface formed of first surface parts facing first portions of said inner wall and being situtated on opposite sides of said insert in zones adjacent said overlap and second surface parts facing second portions of said inner wall and being situated peripherally adjacent said first surface parts of said insert; the improvement wherein said first surface parts are peripherally concave, whereby the cross-sectional outline of said insert has the shape of an hourglass; further wherein said first portions of said inner wall define a clearance with respective said first surface parts of said insert and further wherein a flowable metal fills at least one said clearance.

4,364,665

STORAGE AND MIXING SILO FOR BULK MATERIAL

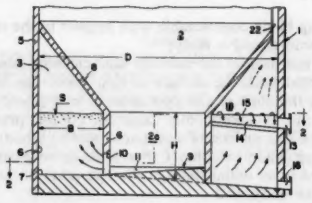
Norbert Ahrens, Oelde, and Heinrich Klockenbusch, Ahlen, both of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,811

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949791

Int. Cl.³ B01F *13/02*

U.S. Cl. 366—106 **22 Claims**



1. A storage and mixing silo for bulk material comprising an upstanding, cylindrical body having walls defining a storage compartment; radially inner and outer boundary walls and a base at the lower end of said body defining a mixing compartment having a lower annular chamber, said chamber and said storage compartment being in communication with one another via a material inlet opening in said inner boundary wall, and said outer boundary wall having at least one material outlet opening circumferentially spaced from said inlet opening; an overflow chute extending radially between said inner and outer boundary walls adjacent and in communication with said material outlet opening, said chute having upstanding overflow edges operable to determine the level of material in said mixing compartment; and air permeable means in said chamber extending circumferentially from said inlet opening to said outlet opening and forming a plurality of independently aeratable circumferentially extending zones, said annular chamber having a radial width of between about 0.25 and 0.37 times the diameter of said body and a height of between about 0.7 and 1.4 times said radial width.

4,364,666

MACHINE FOR MIXING AND COOLING BATCHES OF DRY POWDER INGREDIENTS AND WATER

Richard M. Keyes, Lake Sommerset, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

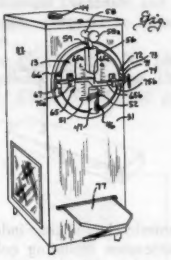
Filed Oct. 3, 1980, Ser. No. 193,758

Int. Cl.³ B01F *7/08, 15/00*

U.S. Cl. 366—142 **2 Claims**

1. A machine for mixing and cooling batches of dry powder ingredients and water comprising, a horizontal mixing cylinder open at one end, a rotary mixer in the cylinder, drive means extending through the other end of the cylinder for driving the

rotary mixer, refrigerating means for cooling the walls of the cylinder, a door for closing said one end of the cylinder, and means for securing said door in a cylinder closing position, the cylinder having a dry powder ingredient inlet passage communicating with the cylinder at a location spaced from said one end, said door having a mix dispensing outlet communicating with the lower portion of the cylinder and a dispensing valve for controlling flow through the dispensing outlet, said door having a water inlet communicating with the upper portion of the cylinder and funnel means at the outside of the door and extending upwardly to a level above the cylinder, said door being formed of a transparent plastic material and having liquid level graduations thereon correlated with the volume at different levels in the cylinder, water supply means including a



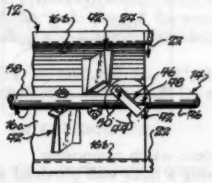
selectively operable water control valve mounted on the machine above the door and having a water delivery outlet at a location to deliver water to said funnel means on the door when the water control valve is opened, said means for securing the said door in a cylinder closing position including a retainer bar dimensioned to span the door and having means for securing the ends to the machine at opposite sides of the door, the retainer bar having first and second generally horizontal bar end portions interconnected adjacent the center of the door and vertically offset from each other a distance greater than the vertical height of the end portions so that when the liquid level is obscured at one side of the door by one bar end portion, the liquid level can still be viewed at the other side of the door.

4,364,667

MIXING AND TRANSPORT CONVEYOR

Ralph E. Reiner, 6474 Chestnut La., Orchard Park, N.Y. 14127

Filed Feb. 6, 1981, Ser. No. 231,965
Int. Cl.³ B01F *7/04*
U.S. Cl. 366—325 **14 Claims**



1. A conveyor for mixing and transporting a viscous material, including finely divided fruit and a pressing aid, to provide a charge of material to a press, said conveyor comprising:

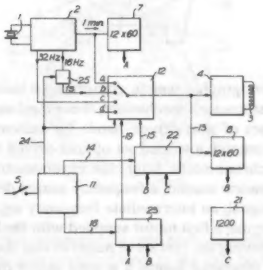
a horizontally disposed trough having an inlet end for receiving material to be mixed and an outlet end for discharging material after mixing thereof, and a driven mixing/transport conveyor device extending lengthwise within said trough for simultaneously mixing said material and transporting same for discharge at said outlet end, said trough including a mixing section of generally U-shaped cross-section, a first end plate joined to an end edge of said section and cooperating therewith to define said inlet end, a second end plate fixed in a spaced relationship to an opposite end edge of said section by a pair of side plates to define said outlet end, said opposite end edge, said second end plate and said side plates cooperating to bound a discharge opening permitting gravity discharge of material from said trough during operation of said conveyor device to mix and transport said material, said discharge opening having a width essentially co-extensive with the widthwise dimension of said section and a length, as measured between said opposite end edge and said second end plate sufficient to permit unobstructed discharge of said material from said trough, said conveyor device including a drive shaft extending lengthwise within said trough and journaled for rotation adjacent its opposite ends by said first and second end plates and a plurality of paddles fixed to said shaft in spaced relationship at least throughout the length of said mixing section, each of said paddles including a transport flange portion and a pair of mixing flange portions, said transport flange portion extending generally radially of the axis of said shaft, having a surface thereof leading in the direction of shaft rotation arranged at an obtuse angle relative to said axis and a pair of opposite side edges arranged in a leading and trailing relationship relative to said outlet and inlet ends of said trough, respectively, said mixing flange portions being joined one to each of said opposite side edges and extending in opposite directions therefrom relatively towards said outlet and inlet ends, respectively, said mixing flange portions lying within planes disposed essentially parallel to said axis.

4,364,668

TIMEPIECE WITH SECONDS DISPLAY ON DEMAND

Pierre-Luc Gagnebin, Bienne, and Pierre Ginalski, St-Maurice, both of Switzerland, assignors to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Oct. 7, 1980, Ser. No. 195,217
Claims priority, application France, Oct. 9, 1979, 79 25528
Int. Cl.³ G04B *19/04*; G04F *8/00*
U.S. Cl. 368—80 **11 Claims**



1. A timepiece comprising:

a time-standard means for providing a time standard signal of a first frequency;

a divider circuit coupled to said time standard means for receiving said time-standard signal therefrom and producing additional time signals of related frequencies;

at least one electric motor means to be driven responsive to said additional time signals;

a display means including an hours hand and a minutes hand driven by said motor means and a stationary dial having indicia thereon for indicating a noon position and the time of the day in hours and minutes;

an electric-circuit means coupled between said divider circuit and said electric motor means for utilizing said additional time signals to drive said motor means to normally indicate the time of day on said dial with said hands, but said electronic-circuit means including a movable manual control element, and having the additional function of utilizing said additional time signals: to automatically drive said motor means to move said hands to, and stop said hands at, the noon position in response to a first movement of said manual control element; to drive the minutes and hours hands from the noon position at rates at which they indicate seconds and minutes on the dial in response to a second movement of said manual control element; to stop the movement of the hands in response to a third movement of said manual control element; to reposition the hands at the actual time of day in response to a fourth movement of the manual control element; and to thereafter drive said motor means to indicate the time of day on said dial with said hands.

4,364,669

CHRONOGRAPHIC WATCH

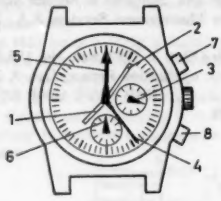
Marcel Thoenig, Granges, and Jean-Pierre Wattenhofer, Neuchatel, both of Switzerland, assignors to Ebauches, S.A., Switzerland

Filed Jan. 19, 1981, Ser. No. 226,182

Claims priority, application Switzerland, Jan. 21, 1980, 437/80

Int. Cl.³ G04F *10/00*; G04B *19/04*

U.S. Cl. 368—111 **14 Claims**



1. A chronographic watch, comprising a timepiece mechanism and a stopwatch mechanism, these mechanisms comprising a first set of gear-driven hands for indicating the hour, minute and second; a second set of gear-driven hands for indicating the chronometric hour, the chronometric minute and the chronometric second; a frequency source delivering a low frequency signal, an intermediate frequency signal and a high frequency signal; a first motor supplied with the low frequency signal and driving the first set of hands so that they perform the function of timepiece hands; a second motor driving the second set of hands; a circuit including means responsive to an external operation to start and stop the stopwatch mechanism by supplying and ceasing to supply the second motor with pulses at the intermediate frequency, means for storing the fraction of a second of chronometric time in excess of the time indicated by the second hand of the second set of hands and control means responsive to the stopping of the stopwatch mechanism for supplying to the first motor a number of pulses of the said high frequency corresponding to the said fraction in such a manner that the said fraction will be indicated by means of the second hand of the first set of hands; and means for resetting the second set of hands to zero in response to an external operation.

4,364,670

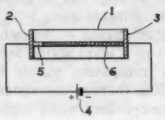
ELECTROPHORETIC ELAPSED TIME INDICATOR

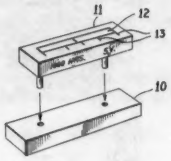
Roger P. White, Yonkers, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Nov. 28, 1979, Ser. No. 97,997

Int. Cl.³ G04C *17/60*

U.S. Cl. 368—114 **6 Claims**





1. An electrophoretic elapsed time indicator comprising an electrophoretic suspension including colloidal particles suspended in a liquid, said particles providing a contrasting color to said liquid, means including a small inside diameter transparent tube for containing said electrophoretic suspension, and means including respective electrodes at each end of said tube for applying a DC voltage across said containing means and moving said particles from one end of said tube to the other end of said tube under said DC voltage in a predetermined time period for indicating said time period.

4,364,671

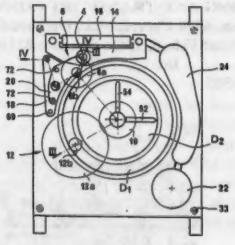
ELECTRONIC WATCH WITH DISPLAY BY DISCS

Josef Fluck, Granges, Switzerland, assignor to Ebauches, S.A., Switzerland

Filed Oct. 14, 1980, Ser. No. 196,774

Int. Cl.³ G04B *19/04, 33/06*

U.S. Cl. 368—221 **8 Claims**



1. An electronic watch comprising:

a casing having a front wall provided with a glass, a rear wall, and a side wall connecting the front and rear walls, and, in said casing:

a spindle which is substantially perpendicular to said front and rear walls and which is mounted pivotally with respect to said casing;

a toothed transmission wheel which is secured to said spindle;

a minutes disc which is secured to said spindle and which is perpendicular thereto and which is provided with a tooth arrangement on its periphery;

an hours disc which is mounted pivotally on said spindle,

which is substantially parallel to the minutes disc and which is provided with a tooth arrangement on its periphery, said discs being disposed between said glass and said toothed transmission wheel;

an electric motor provided with a rotor and means for supplying and actuating said motor;

a first train of gears engaging with said rotor and said minutes disc; and

a second train of gears engaging with said hours disc and said transmission wheel.

4,364,672

METHOD FOR DRIVING LIQUID CRYSTAL DISPLAY ELEMENTS

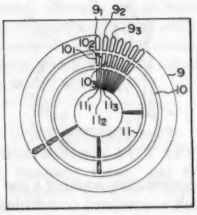
Yoshimichi Shibuya; Masami Takahashi, and Tadashi Ishibashi, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 10, 1980, Ser. No. 138,977

Claims priority, application Japan, Apr. 13, 1979, 54-44153

Int. Cl.³ G04L *17/00*; G09F *9/00*

U.S. Cl. 368—240 **7 Claims**



1. A method for driving a liquid crystal display element disposed between a pair of substrates and having electrodes on the substrates, said electrodes being divided into a multiplicity of blocks to give an analogue display of at least 3 kinds of information, wherein said liquid crystal is driven over a $\frac{1}{3}$-duty period by applying four kinds of voltage waveforms to the electrodes on one of said substrate and at least five kinds of voltage waveforms to the electrodes on the other substrate, thereby simultaneously displaying three arbitrary pieces of the information, and wherein one of said four kinds of voltage waveforms applied to the electrodes of one of said substrates is set to provide an OFF condition for the display regardless of which of the at least five voltage waveforms is applied to the electrodes of said other substrate.

4,364,673

ELECTRIC CLOCK, PARTICULARLY A QUARTZ CLOCK

Walter Bleuel, Hofheim, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 23, 1981, Ser. No. 227,839

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006503

Int. Cl.³ G04B *37/00*

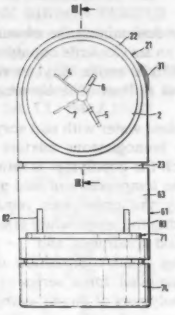
U.S. Cl. 368—316 **19 Claims**

1. In an electrical clock, particularly a quartz clock, with a movement case receiving a time-producing and time-indicating device, on the rear side of the movement case setting members being provided for the clock time and for an alarm device, and a mount in which the movement case is insertable in different relative positions relative to the mount, the improvement comprising

a viewing glass covering the time-indicating device,

said movement case with said viewing glass forming a self-contained unit, the mount is formed as a housing surrounding on all sides at least the rear side of the movement case and has an inner periphery which corresponds to the periphery of the movement case, said movement case being detachably catchably insertable within the inner periphery of said housing,

attachment means for connection to said housing at the outer periphery of said housing,



setting means accessible from an outside of said housing are mounted in said housing, said setting means, when the movement case is inserted in said housing, for being operatively connected, in all relative positions of said movement case in said housing, with the setting member of the alarm device.

4,364,674

WATCH CASES WITH PUSHBUTTONS

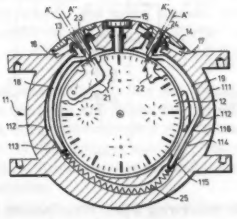
Bernhard Tesch, Im Baumgarten 4, CH 6373, Ennetbuergen, Switzerland

Filed Aug. 30, 1979, Ser. No. 71,050

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2837939

Int. Cl.³ G04B *29/00*

U.S. Cl. 368—319 **38 Claims**



1. A watch case comprising a case body housing a pushbutton mounted for movement relative to the case body, said case body having means for defining an interior chamber adapted to receive therein a watch movement, a rod rigidly connected to said pushbutton, said rod having a medial portion movable in a bore of said case body, said bore defining a radial direction perpendicular to the axis of the bore and having an innermost terminal end portion opening into said interior chamber said rod having a portion extending beyond the innermost terminal end portion of said bore in said radial direction, and means within said interior chamber defined by said case body spaced remote from said pushbutton and spaced outwardly in said radial direction from said bore. innermost terminal end portion for confiningly guiding the movement of said rod relative to said case body during the movement of the rod under the influence of the movement of the pushbutton.

4,364,675
WET MELTING POINT ANALYSIS

Bruce G. Frushour, Cary, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 23, 1981, Ser. No. 246,489
Int. Cl.³ G01N 25/04
U.S. Cl. 374—16 4 Claims

1. A method for determining the amount of copolymerized vinyl monomer in an acrylonitrile copolymer formed by copolymerizing acrylonitrile and a vinyl monomer, wherein said copolymer contains at least 75% by weight of acrylonitrile, comprising:

(1) mixing sufficient water with said acrylonitrile copolymer to provide a homogeneous mixture of copolymer and water in which the copolymer is saturated with water,

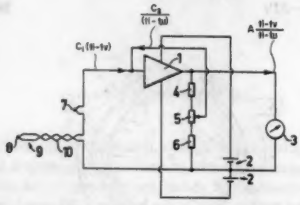
(2) increasing the temperature of said mixture under conditions whereby the copolymer remains saturated with water and noting the temperature at which the copolymer melts under said conditions, and

(3) from melting point/composition data previously obtained and compiled for a series of acrylonitrile/vinyl monomer copolymers of known composition and formed from the same vinyl monomer wherein the amount of vinyl monomer varied from copolymer to copolymer and melting points were determined in the manner set forth in above steps (1) and (2), translate the melting point obtained in step (2) to percent by weight copolymerized vinyl monomer.

4,364,676
HEAT TRANSFER METER

Viktor Oja, and Sigvard Wikström, both of Skelleftea, Sweden, assignors to Memoteknik AB, Skelleftea, Sweden

PCT No. PCT/SE80/00077, § 371 Date Nov. 13, 1980, § 102(e) Date Nov. 13, 1980, PCT Pub. No. WO80/01954, PCT Pub. Date Sep. 18, 1980
PCT Filed Mar. 13, 1980, Ser. No. 217,113
Claims priority, application Sweden, Mar. 16, 1979, 7902378
Int. Cl.³ G01N 25/18
U.S. Cl. 374—44 9 Claims



1. A device for measuring a heat transmission coefficient for a wall portion separating an inner media having a temperature t_i and an outer media having a temperature t_u, comprising:

an amplifier having an input and an output;

an indicator coupled to said output for indicating the measured heat transfer coefficient;

first thermal sensor means adapted for sensing a temperature t_v of said wall portion at a surface thereof on its inner media side;

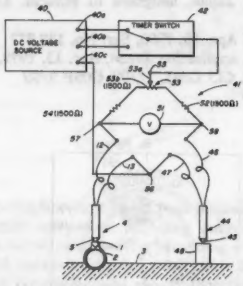
second thermal sensor means for sensing said temperature t_i of said inner media, said first and second thermal sensors being connected by an input circuit coupled to said amplifier input to provide a signal proportional to (t_i-t_v); and

feedback circuit means coupled at least in part from said output to said input, said circuit being adjustable to provide a feedback signal to said input for causing the gain of said amplifier to be proportional to $1/(t_i-t_u)$, whereby there is developed at said output a signal proportional to $A(t_i-t_v)/(t_i-t_u)$ indicative of said heat transmission coefficient, where A is a constant selected for calibrating said indicator to a predetermined scale.

4,364,677
METHOD AND MEANS OF RAPIDLY DISTNGUISHING A SIMULATED DIAMOND FROM NATURAL DIAMOND

Leland E. Ashman, Belmont, Mass., assignor to Ceres Electronics Corporation, Waltham, Mass.

Continuation of Ser. No. 885,502, Apr. 10, 1978, Pat. No. 4,255,962. This application Mar. 3, 1981, Ser. No. 240,126
The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.
Int. Cl.³ G01N 25/18
U.S. Cl. 374—44 6 Claims



1. A method of determining whether a test gem is a simulant gem or a gem which is simulated comprising the steps of:

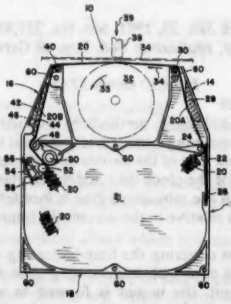
subjecting the test gem to heat flow from an electrically powered heat flow element in a probe tip while a pulse of electric power is applied to the heat flow element, the heat flow element being in close thermal relationship with a small gem contacting surface of the probe tip such that the heat flow element is thermally responsive to the test gem within a few seconds while power is applied thereto; and

measuring the thermal response of the probe tip within a few seconds or less as an indication of the thermal conductivity of the test gem.

4,364,678
REINKABLE RIBBON CARTRIDGE

Robert M. Ogan, Gretna, La., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Continuation of Ser. No. 61,844, Jul. 30, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,071
Int. Cl.³ B41J 32/02, 31/16
U.S. Cl. 400—202.2 1 Claim



1. In a unitary, self-contained ribbon cartridge for use in a

printing device for printing information on a sheet or strip of paper, comprising:

(a) a thin flat case having a general U-shaped configuration, the base of said U having a storage space for storing said ribbon in a continuous loop;

(b) one of the arms of said U being an exit arm, and the other arm being a re-entry arm;

(c) pressure roller drive means for withdrawing the ribbon from said storage space, out through said exit arm, across the open ends of said arms, and into and through said re-entry arm, where said pressure roller drive means forces said ribbon into said storage space;

the improvement in means for continuously reinking said ribbon while in use, comprising;

(d) a stationary ink absorbing reservoir strip in said re-entry arm comprising a pad of porous material such as felt;

(e) a separate stationary ink transfer strip of felt or similar porous material, positioned with one side against said ink reservoir, the re-entering ribbon adapted to move against and along the opposite side of said ink transfer strip, the case having an opening in the wall there adjacent said ink absorbing reservoir strip whereby a liquid marking fluid may be added to said ink absorbing reservoir strip to be absorbed thereby whereby ink is transferred from said reservoir strip to said transfer strip and to said ribbon, and

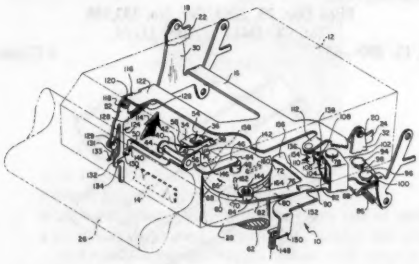
(f) an excess ink removing of felt or similar fibrous material, against and along which the inked side of said ribbon rubs while moving out of said exit arm.

4,364,679

CARTRIDGE RIBBON LIFT APPARATUS

Scott J. Longrod, Danbury, Conn., and Francis R. Oakley, Cortland, N.Y., assignors to SCM Corporation, New York, N.Y.

Filed Feb. 17, 1981, Ser. No. 235,201
Int. Cl.³ B41J *35/10*
U.S. Cl. 400—212 **12 Claims**



1. A ribbon lift apparatus for an electric printing device comprising:

a ribbon support member operable for movement between a raised position for locating a ribbon in printing position and a lowered position for viewing printing characters;

a lift linkage operable from a first position to a second position to raise said ribbon support member from said lowered position to said raised position and operable to return to said first position;

a drive means including a cam cyclincally operable for actuating said lift linkage to said second position and for allowing said lift linkage to return to said first position;

electrical transducer means operatively connected to said drive means to cause said drive means to actuate said lift linkage; and

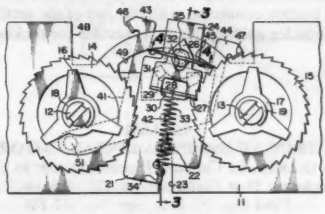
a latch means responsive to operation of said electrical transducer means to latch said ribbon support member in said raised position for a sufficient period to allow printing while said lift linkage returns to said first position, said latch means responsive to deactivation of said electrical transducer means to unlatch said ribbon support member to allow said ribbon support member to return to said lowered position.

4,364,680

INK RIBBON FEEDER

Katsumi Maeda, Shizuoka, Japan, assignor to Star Seimitsu Kabushiki Kaisha, Japan

Filed May 1, 1980, Ser. No. 145,493
Claims priority, application Japan, May 2, 1979, 54-54539
Int. Cl.³ B41J *35/50*
U.S. Cl. 400—220.1 **4 Claims**



1. An ink ribbon feeder for causing a reciprocating movement of an ink ribbon between a pair of spools; comprising

a baseplate;

a pair of ratchet wheels rotatably mounted on the baseplate for driving the spools;

a control member located intermediate the pair of ratchet wheels and supported on the baseplate so as to be movable in a direction perpendicular to a line joining the axes of the pair of ratchet wheels and so as to permit one end thereof to be rockable toward either ratchet wheel;

a ratchet wheel drive member carried by one end of the control member, the ratchet wheel drive member having one end which is disposed centrally in one end of the control member so as to be rockable and so as to be movable in a direction toward the other end of the control member, the other end of the ratchet wheel drive member selectively engaging with a tooth on a respective one of the ratchet wheels and being formed with an engaging portion which causes said one ratchet wheel to rotate when the control member rocks toward said one ratchet wheel;

a resilient member having its one end connected to a central portion of the other end of the ratchet wheel drive member and its other end connected to a central portion of the other end of the control member, thereby urging the ratchet wheel drive member toward the other end of the control member;

a switching lever having a pair of anti-reversing pawls on one end thereof which selectively engage a tooth on a respective one of the pair of ratchet wheels to prevent a reverse rotation of the engaged ratchet wheel, the switching lever being pivotally mounted on the baseplate intermediate its ends, one end of the switching lever carrying said one end of the control member so as to be movable in said perpendicular direction and so as to be rockable whenever the control member rocks in the same direction as the rocking motion of the control member;

means on the other end of the switching lever for selectively urging said one end of the switching lever toward one of the ratchet wheels said urging means acting, whenever the center of said one end of the switching lever has rocked toward either ratchet wheel from a line which perpendicularly intersects with said first mentioned line at a point midway between the pair of ratchet wheels, to cause said one end of the switching lever to rock toward the ratchet wheel;

a drive member for moving the control member in said perpendicular direction;

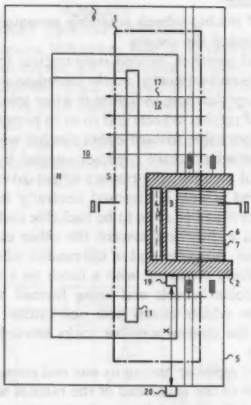
means for driving the drive member to urge the control member in one direction, the engaging element of the ratchet wheel drive member being engaged with one of the ratchet wheels when the urging means urges the control member in said one direction; and wherein the other end of the ratchet wheel drive member is provided with a projection on its bottom surface, and the control member has a guide slot in which the projection on the ratchet wheel drive member bottom surface loosely fits, the guide slot including a rectilinear slot portion which guides the drive member for movement in said direction, and the guide slot including an arcuate slot portion having a central portion connected with one end of the rectilinear slot portion for guiding the drive member for rocking motion.

4,364,681

PRINTER HAVING A LINEAR MOTOR

Francois Gernelle, Le Chesnay, France, assignor to Compagnie Internationale Pour l'Informatique CII-Honeywell Bull

Filed Jun. 19, 1980, Ser. No. 161,149
Claims priority, application France, Jun. 19, 1979, 79 15627
Int. Cl.³ B41J *19/30*
U.S. Cl. 400—322 **8 Claims**



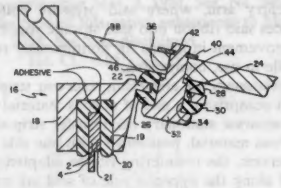
1. A dot type printer comprising a printing head, a carriage carrying the head, an elongated guide rail having a high magnetic permeability, the carriage being mounted on the guide rail so the carriage can be translated longitudinally along the guide rail, a drive system for longitudinally translating the carriage along the guide rail, said drive system including: means for establishing a magnetic field with magnetic lines of flux extending, at right angles to the guide rail elongated direction, through an air gap, a winding wound on said carriage to produce magnetic field in the same direction as the elongated direction of the guide rail in response to current being applied to the winding, whereby the magnetic field from the winding interacts with the permanent magnetic lines of flux to produce a force to translate the carriage along the rail, the printing head including plural printing hammers, a coil for controlling activation of each hammer, the coil controlling the activation of each hammer being disposed in the air gap so as to be responsive to the magnetic lines of flux, whereby a magnetic field resulting from current being supplied to a particular coil interacts with the magnetic lines of flux to produce a force to activate the hammer associated with the particular coil.

4,364,682

ACOUSTIC MEMBER MOUNTING MEANS FOR USE IN TYPEWRITERS

Scott J. Longrod, Woodbury, Conn., and Robert M. DuRoss, Huntsville, Ala., assignors to SCM Corporation, New York, N.Y.

Filed Oct. 15, 1981, Ser. No. 311,578
Int. Cl.³ B41J *5/00*
U.S. Cl. 400—477 **18 Claims**



1. In a typewriter in which input signals generate sound waves in an acoustic member, said typewriter having means for mounting the acoustic member comprising:

a first insulating means in which the acoustic member is affixed;

a member in which the first insulating means is supported;

a second insulating means on which the support member means is mounted; and,

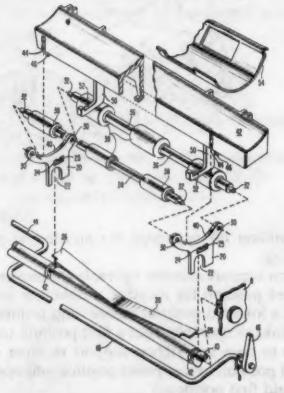
means for securing the second insulating means to a typewriter frame.

4,364,683

PAPER FEED ROLLER ASSEMBLY FOR A TYPEWRITER OR PRINTER

Iraj D. Shakib, and Krikor Yosmali, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1981, Ser. No. 333,958
Int. Cl.³ B41J *13/036, 13/16*
U.S. Cl. 400—637 **3 Claims**



1. A manually insertable and removeable paper feed roll device for a printer having a rotatable platen, a frame comprising a frame having sides and at least a rail extending therebetween and a release bail capable of operator movement away from said platen, comprising:

a paper deflector support;

a paper deflector;

a plurality of feed rolls, said feed rolls having a periphery extending through said paper deflector for engagement of said platen;

support means for maintaining said feed rolls in spaced relation to each other;

said paper deflector support supportable on said support means and moveable thereon;

said paper deflector support further comprising retraction and retention means for engaging said release bail to retract said paper deflector support upon movement of said release bail;

spring means engageable with said rail and biasingly engaged with said support means, whereby said device is manually insertable into said printer and retained therein by said retention means engaging said release bail, and said support means are biased to engage said feed rolls with said platen when said release bail is disengaged from said retraction and retention means.

4,364,684

WRITING INSTRUMENT

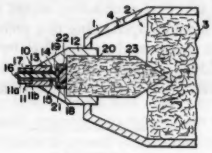
Tadashi Kohno, Ishioka; Takahiko Shimizu, Tokyo; Kenji Takahashi, Soka; Hishao Fukui, Tokyo; Akio Okubo, and Noriaki Masuda, both of Tsuchiura, all of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1980, Ser. No. 158,387

Claims priority, application Japan, Jun. 21, 1979, 54-85107[U]; Jun. 21, 1979, 54-85108[U]; Dec. 25, 1979, 54-179590[U]; Jan. 24, 1980, 55-7355[U]; Jan. 31, 1980, 55-11135[U]

Int. Cl.³ B43K *3/04*

U.S. Cl. 401—264 **9 Claims**



1. A writing instrument comprising:

a barrel having therein an ink reservoir;

a nib holder body extending from a fore end of said barrel;

a longitudinal nib member positioned within said nib holder body for longitudinal displacement with respect thereto between an inner position and an outer position;

said nib member having at a rear end thereof an enlarged head portion;

a resilient seat member comprising a block formed of an ink permeable material, mounted within said nib holder body and resiliently contacted with said head portion, for urging said nib member toward said outer position thereof until said head portion abuts against said nib holder body, whereat a fore end of said nib member projects forwardly from said nib holder body, whereby when a writing pressure from a writing surface is longitudinally applied to said fore end of said nib member, said nib member moves against the resilient force of said seat member to said inner position, whereat said head portion is spaced from and out of contact with said nib holder body; and

said nib member and said nib holder body being dimensioned such that when said nib member is in said inner position thereof due to the writing pressure, both said nib member and said nib holder body are in contact with the writing surface and function as a writing tip.

4,364,685

DEVICE FOR ATTACHING AN INSERTION PART TO A BASE SURFACE

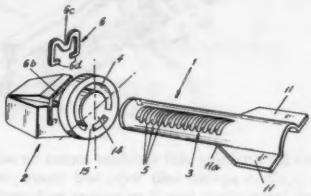
Joachim Janz, Wuppertal, Fed. Rep. of Germany, assignor to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Aug. 27, 1980, Ser. No. 181,801

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1979, 2934788

Int. Cl.³ F16B *7/00*; F16D *1/12*

U.S. Cl. 403—108 **24 Claims**



1. An attachment device for attaching an object to a base surface, comprising:

the object having an insert that is to be secured to the base surface; said insert having a longitudinal axis and a cross-section comprising a circular arc;

an attachment clip for being secured to the base surface; said attachment clip having an aperture formed therein and shaped for receiving said insert; said insert being rotatable in said aperture between a first and a second rotational position; and

means for detachably securing said insert in said aperture, said securing means comprising a dentate structure on one of said insert and said attachment clip and locking means disposed on the other of said insert and said attachment clip for engaging said dentate structure; said dentate structure comprising a plurality of serrations arranged one behind the other in the direction of said longitudinal axis; said dentate structure and said locking means being so disposed as to engage each other to lock said insert in said aperture at any one of a plurality of insertion depths, each said depth corresponding to an engagement of said locking means and one of said plurality of serrations; at any insertion depth, said engagement occurring when said insert is in said first rotational position, and said dentate structure and said locking means being further disposed as not to engage each other when said insert is in said second rotational position, whereby said insert can be inserted into or drawn from said aperture when said insert is in said second rotational position.

4,364,686

LOCKING DEVICE FOR GRID SYSTEM

Joseph F. Sharp, Norwalk; Ormond S. Sutter, Placentia, and Philip W. Cornwell, Newport Beach, all of Calif., assignors to Lok Products Company, Fullerton, Calif.

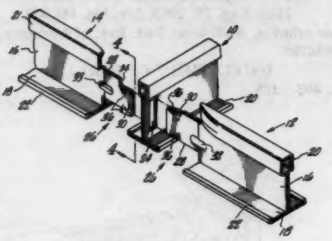
Filed Nov. 17, 1980, Ser. No. 207,212

Int. Cl.³ F16B *7/22*

U.S. Cl. 403—347 **8 Claims**

1. An apparatus for constructing a grid system comprising a support member and a pair of opposing transverse members, said support and transverse members having a similar cross-sectional configuration comprising a central web and lower flanges; a rectangular hole in the web of said support member; a tongue extending longitudinally from the web of each transverse member, said tongue having a tab portion adjacent to said web and an insert portion which communicates with said rectangular hole; said tongue being offset a distance from the plane of the web of said transverse member; shoulder means on said tongue to abut said web of said support member upon insertion of said insert portion into said hole; upper and lower shoulder means on said insert portion which face said trans-

verse member for engagement of said web of said support member adjacent to said rectangular hole at the upper and lower ends of said hole; and wedge means on said transverse



members for retaining said shoulder means on said insert portion in position against said web, said insert portion having sufficient longitudinal length to engage said wedge means on the opposing transverse member.

4,364,687

DOUBLE ACTING CONE COUPLING

Lars Adell, Fylkinggatan 45, S-595 00 Mjölby, Sweden

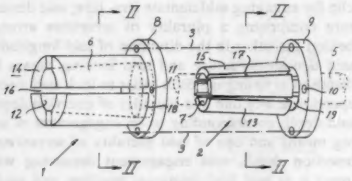
PCT No. PCT/SE79/00254, § 371 Date Jul. 10, 1980, § 102(e) Date Jul. 10, 1980, PCT Pub. No. WO80/01305, PCT Pub. Date Jun. 26, 1980

PCT Filed Dec. 18, 1979, Ser. No. 200,496

Claims priority, application Sweden, Dec. 18, 1978, 7812978

Int. Cl.³ F16D *1/06*

U.S. Cl. 403—370 10 Claims



1. A cone coupling for interconnecting two elements, such as a shaft and a hub, which are rotatable relative to one another, comprising:

an elongate outer cone sleeve having an inner conically tapered surface, having a strengthened base portion adjacent an end thereof, and having a cylindrical sleeve portion having a plurality of elongate axial through slots, each axial through slot extending along the entire sleeve portion from one end thereof to a position adjacent said strengthened base portion;

An elongate inner cone sleeve having an outer conically tapered surface, having a strengthened base portion adjacent an end thereof and having a cylindrical sleeve portion having a plurality of elongate axial through slots, each axial through slot extending along the entire sleeve portion from one end thereof to a position adjacent said strengthened base portion;

said inner and outer cone sleeves being adapted to be pulled together for connection together with the inner surface of the outer cone sleeve pressed against the outer surface of the inner cone sleeve;

said inner and outer cone sleeves each comprising a deformation zone in said cylindrical sleeve portion at a location adjacent said strengthened base portion, each of said deformation zones being constructed and arranged to permit a parallel radial displacement of the slotted sleeve portions of said inner and outer cones relative to their respective strengthened base portions upon press pulling together of the inner and outer cone sleeves.

4,364,688

ANCHORING BASE FOR ROAD SIGN POSTS AND THE LIKE

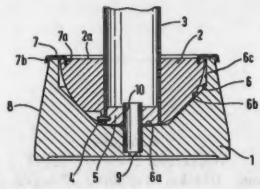
Tivadar Bitvai, Hägnegardsvägen 6, 43600 Askim, Sweden

PCT No. PCT/SE80/00095, § 371 Date Dec. 6, 1980, § 102(e) Date Dec. 5, 1980, PCT Pub. No. WO80/02167, PCT Pub. Date Oct. 16, 1980

PCT Filed Apr. 2, 1980, Ser. No. 224,539

Int. Cl.³ E01F *9/00*; E04H *12/22*

U.S. Cl. 404—10 10 Claims



1. In combination: a base having a first cavity open at the top, a weight received in said first cavity and having an essentially flat top, a post supported by said weight, first breakable means interconnecting said base and said weight, said first interconnecting means including a pin inserted into coaxially arranged second cavities in said weight and in said base, and second breakable means interconnecting said weight and said post, said first cavity being defined in part by a substantially vertically extending portion adjacent the top of said cavity and adapted to cooperate with said flat top of said base in such a way that when said first connecting means is broken and said post is brought from an upstanding to a prostrate position said flat top engages and is held to said base by said substantially vertically extending portion, and that said second connecting means breaks before said weight becomes disengaged from said base.

4,364,689

MANHOLE COVER ASSEMBLY

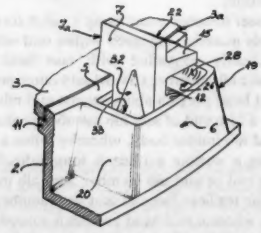
Robert Dumortier, 9 rue Duchartre, Beziers, France

Filed Apr. 23, 1981, Ser. No. 256,922

Claims priority, application France, Apr. 25, 1980, 80 09720; Nov. 24, 1980, 80 25029

Int. Cl.³ E02D *29/14*

U.S. Cl. 404—25 9 Claims



1. A manhole cover assembly comprising:

a seating ring adapted to be received in a roadway pavement around a manhole opening, said ring being provided with at least one upwardly open lateral compartment communicating with the interior of said ring through a window

formed in said ring and overhung by a beak defining a gap at said window;

a plug-type cover receivable in said ring and formed with a radially extending finger adapted to pass through said gap and to underlie said beak upon rotation of said cover relative to said ring; and

locking means for preventing reverse rotation of said cover in said ring, said locking means including

a horizontal pivot extending radially from said finger and adapted to be received in said compartment, and

a pawl swingably mounted on said pivot for movement between an upright position allowing rotation of said cover in said ring and a horizontal position wherein a free end of said pawl is juxtaposed with a wall of said compartment to block rotation of said cover in said ring, said pivot and said pawl being provided with mutually engaging means preventing dislodgment of said pawl from said pivot.

4,364,690

METHODS OF SETTING ROADMAKING MATERIAL AND SMOOTHING SCREEDS FOR PERFORMING SUCH METHODS

Theodor Bruns, Jeddeloh, Fed. Rep. of Germany, assignor to Maschinenfabrik Klaus-Gerd Hoes, Wardenburg-Westerholt, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 963,598

Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823727

Int. Cl.³ E01C *19/22*

U.S. Cl. 404—118 **2 Claims**

2. A smoothing screed for use with a road finishing machine in setting roadmaking material when renewing the surface of a road pavement, which has been damaged by tracks or depressions worn therein, comprising:

a central main screed having at least two screed sections each having an inner and outer lateral end, said screed sections being spaced-apart and being disposed laterally side by side with respect to one another with the inner lateral ends thereof disposed adjacent to one another;

a common smoothing plate having a central section and two lateral ends, on which said two screed sections are disposed;

a ridge profile adjustment device including an adjusting screw pivotably coupling said two screed sections together in the area adjacent to their inner lateral ends so as to permit said sections to be moved to an inclined position relative to one another and to, in turn, permit lateral bending of said common smoothing plate into a generally concave, depressed, negative ridge profile in the center section thereof;

two adjusting screeds, each of which is mounted for lateral movement between a retracted and withdrawn position relative to the outer lateral end of one of said screed sections so as to vary the working width of said smoothing screed, each of said adjusting screeds being at least partially disposed on said common smoothing plate; and

two supplementary ridge profile adjustment devices, each of which include an adjusting screw, which are each disposed adjacent to an opposite outer lateral end of said screed sections for pivotably coupling said adjusting screeds to said screed sections so as to permit said screed sections and adjusting screeds to be moved to an inclined position relative to one another and to, in turn, permit lateral bending of said smoothing plate into a generally convex, raised, positive profile adjacent the lateral ends thereof.

4,364,691

SURFACE WAVE ATTENUATION APPARATUS

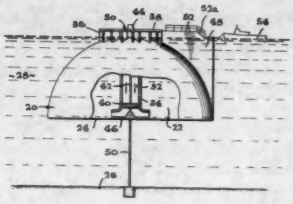
Leslie S. Wirt, Newhall, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Jun. 27, 1980, Ser. No. 163,814

The portion of the term of this patent subsequent to May 8, 1996, has been disclaimed.

Int. Cl.³ E02B *3/06*

U.S. Cl. 405—26 **3 Claims**



1. An apparatus for providing a calm mooring area on a sea surface, said sea surface having waves moving thereon, said apparatus comprising a wave attenuating structure that includes:

(a) a generally dome-like shell for causing said waves to break, said shell being configured to refract said waves so that the waves after breaking flow along said shell toward a central opening at its apex;

(b) guide vanes secured to said shell for directing said breaking waves into said central opening to induce a downward vortical flow of sea water through said central opening;

(c) a standpipe having an inlet end and an outlet end, the inlet end being attached to said shell circumjacent said central opening, the outlet end extending into a region beneath said shell into which said downward flow of sea water is discharged;

(d) diffuser means attached to said outlet end of said standpipe for diffusing said sea water discharged from said standpipe into said region beneath said shell;

(e) tethering means for securing said shell in a partially submerged position with respect to said sea surface, said tethering means permitting random orientation of said shell with respect to said waves moving on said sea surface; and

(f) a fin-like member secured to said shell for providing a selected orientation for said shell with respect to the movement of said waves on said sea surface, said selected orientation being such that sea wave pressure is substantially equal on each side of said fin-like member, thereby providing a region of relatively calm water adjacent said fin-like member, said calm water region being said calm mooring area.

4,364,692

BUCKLE ARRESTOR FOR PIPE USING CLOSELY SPACED TURNS OF ROD TO FORM A COIL

Stelios Kyriakides, Pasadena, and Charles D. Babcock, Altadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

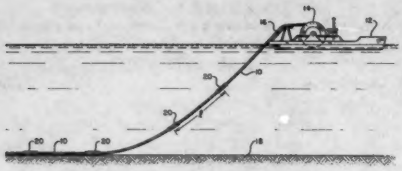
Filed Dec. 26, 1979, Ser. No. 107,325

Int. Cl.³ F16L *1/00*

U.S. Cl. 405—168 **8 Claims**

1. A method for arresting the propagation of a buckle along an underwater pipeline comprising the steps of paying out a continuous pipe into the water from a vessel, tightly winding a metal rod around the pipe to form arrestors at intervals on the pipe as it is being laid, each arrestor consisting of a plurality of turns of said rod, and securing the ends of said rod in each

arrestor to prevent the turns from expanding while a buckle propagating in the pipe is arrested, thereby to form flexible



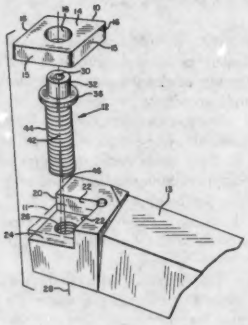
buckle arrestors which allow the pipe to conform to natural bends as it is laid.

4,364,693

TOOL HOLDER

Harold W. Lindsay, 2480 NW. Vaughn, Portland, Oreg. 97210

Filed Dec. 22, 1980, Ser. No. 218,579
Int. Cl.³ B26D *1/00*
U.S. Cl. 407—104 **4 Claims**



1. In a holder for holding a disposable cutting insert having an axial hole therein, the holder having a shank having a recess therein to provide a seating face and at least one supporting shoulder for supporting the cutting insert, the shank having a threaded bore therein, the bore being substantially normal to the seating face and adapted for aligment with the hole in the insert, and a threaded retention pin engaging the threaded bore, the pin having a cylindrical head portion adapted to engage the hole in the insert,

the improvement comprising:

a retention pin fabricated from a blank having a cylindrical body portion having a first axis concurrent with the axis of the cylindrical head portion,

the body portion being threaded on a second axis angularly disposed with respect to the first axis and intersecting the same at about the midpoint of the cylindrical body portion,

whereby the pin when threaded into the bore rotates the head portion about the second axis, thereby to force the cutting insert against the supporting shoulder while drawing the insert into engagement with the seating face.

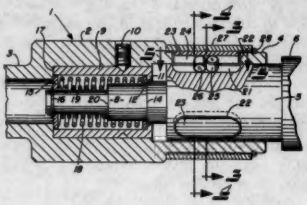
4. A retention pin fabricated from a blank having a cylindrical head and a cylindrical body portion, the body portion having a first axis concurrent with the axis of the head, the body portion being threaded on a second axis angularly disposed with respect to the first axis and intersecting the same at about the midpoint of the cylindrical body portion, whereby threading the pin into a threaded bore causes the head thereof to rotate about the second axis as the pin is received in the bore.

4,364,694

TAP HOLDER

Wilbur N. Miles, Chagrin Falls, Ohio, assignor to Erickson Tool Company, Solon, Ohio

Filed Oct. 1, 1980, Ser. No. 192,737
Int. Cl.³ B23Q *5/22*; B23G *1/46, 5/14*
U.S. Cl. 408—139 **5 Claims**



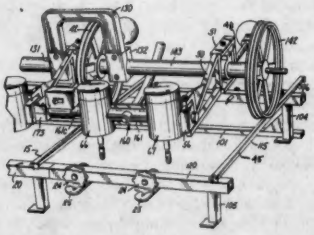
1. A tap holder assembly comprising a housing having a tubular socket with at least three equally spaced-apart axially extending slots radially through the wall thereof; a tap holder having a shank extending coaxially into said socket; key means keying said housing and holder against relative rotation while permitting relative axial movement thereof; said key means comprising at least three equally spaced-apart axially extending V grooves in said shank, axially extending drive blocks in the respective slots of width slightly less than the width of said slots; said drive blocks having axially extending V grooves in their radially inner faces forming two pairs of perpendicularly related parallel faces with the respective V grooves in said shanks, and circular cross-section keys in said V grooves having rolling engagement with one pair or the other of said parallel faces according to the direction of a torque load imposed on said keys during relative axial movement of said housing and holder; and a retainer sleeve having a clearance fit over said socket and engaged with the radially outer faces of said blocks to retain said keys in engagement with the respective pairs of parallel faces.

4,364,695

CARVING MACHINE WITH AUXILIARY FRAME

John O. Lenz, Coon Rapids, Minn., assignor to Kurt Manufacturing Company, Inc., Minneapolis, Minn.

Division of Ser. No. 124,471, Mar. 3, 1980, abandoned. This application Jun. 11, 1981, Ser. No. 272,709
Int. Cl.³ B23K *1/16*
U.S. Cl. 409—103 **4 Claims**



1. In a carving machine, a frame comprising a pair of rail members, said rail members comprising rectilinear cross section tubes, each having one of its longitudinal extending corners projecting upwardly, cross members supporting said rails spaced apart in substantially parallel position, said cross members comprising rectilinear tubular members having open ends, a carving spindle arm support assembly mounted on said rails

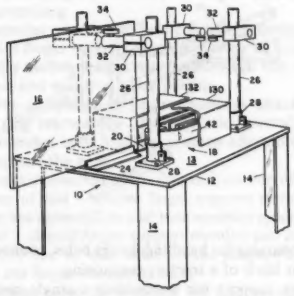
for movement therealong comprising a pair of wheels, one on each of said rails, and an auxiliary carving machine frame having a single rail thereon, and an auxiliary carving spindle and arm support assembly mounted on the auxiliary frame and having one end supported on said single rail, said auxiliary frame including auxiliary cross members which align with said cross members of the main frame when the auxiliary frame is mounted to said main frame, means to couple the end of the auxiliary carving spindle arm support assembly opposite from the single rail to the main carving spindle arm support assembly for movement therewith, and means to align and clamp cross members of the main and auxiliary frames together comprising interior plug means within the aligning tubular cross members on each of said main frame and auxiliary frames and serving to clamp said tubular cross members in alignment and in end to end relationship.

4,364,696

EDGE FINISHING MACHINE

Louis W. Syarto, 184 Highland Rd., Fairfield, Conn. 06430, and Sanford S. Zimmerman, 40 Easton Rd., Westport, Conn. 06880

Filed Feb. 21, 1979, Ser. No. 13,077
Int. Cl.³ B23C *3/12*; B27C *5/06*
U.S. Cl. 409—138 **3 Claims**



1. A material working machine for edge finishing of workpieces of varying size and of various materials, said machine comprising:

A. a work table having a flat work surface over which a workpiece is adapted to be fed,

B. an aperture in said work table which defines a work station in the path of movement of the workpiece,

C. a working tool disposed in said aperture and positioned therein in appropriate relation to the bottom edge of the workpiece to perform a working operation on said edge of the workpiece as the latter passes over said aperture,

D. means mounted beneath said work table for supporting and operating said working tool, and

E. a feeding assembly mounted on said work table for feeding a workpiece in operative association with said working tool, said feeding assembly comprising

1. a pair of opposed resilient gripping elements for forcibly pressing against opposite surfaces of the workpiece with sufficient pressure to hold the workpiece in feeding relationship, said resilient gripping elements comprising a pair of endless flexible belts,

2. means mounting said gripping elements for movement along a predetermined path of movement at least a portion of which traverses said working station, said means mounting said gripping elements comprising a plurality of rollers for each belt, the rollers for each belt being configurated and spaced so as to define a pair of adjacent runs which are juxtaposed to and run along said work station and a pair of remote runs which are spaced from said adjacent runs,

3. means disposed in the space between said adjacent runs and said remote runs for adjusting the space between said pair of adjacent runs of said belts, said means for adjusting the space between said adjacent runs of said belts comprising means for simultaneously moving the adjacent run and the remote run of each of said belts toward and away from said work station by the same amount of movement, said means for simultaneously moving the adjacent run and the remote run of each of said belts toward and away from said working station by the same amount of movement comprising

a. a block secured to said work table in the space between said adjacent and said remote runs of said belts,

b. a pair of rods movably mounted in said block,

c. a first backing plate secured to one end of said rods for movement therewith,

d. a second backing plate secured to the other end of said rods for movement therewith,

e. a cam mounted for rotation in said block between said first and second backing plates and being of a size to contact both backing plates, and

f. means for rotating said cam

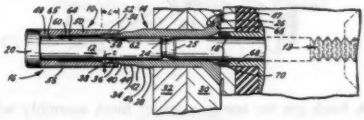
whereby said cam causes movement of said first and second backing plates toward and away from said work station and thereby maintains the overall length of the belt constant.

4,364,697

BLIND FASTENER ASSEMBLY

Lloyd S. Binns, Fountain Valley, Calif., assignor to SPS Technologies, Inc., Jenkintown, Pa.

Continuation-in-part of Ser. No. 864,410, Dec. 12, 1977, abandoned. This application Jul. 27, 1979, Ser. No. 61,361
Int. Cl.³ F16B *19/10*
U.S. Cl. 411—38 **15 Claims**



1. A blind fastener assembly for installation in a workpiece having an accessible and an inaccessible surface and an opening therebetween, said assembly comprising:

a mandrel having an enlarged head at one end thereof, an elongated shank portion and means on said shank portion adapted for advancement of said mandrel in a direction along its longitudinal axis;

expander means having an enlarged head at one end thereof formed to bear upon the accessible workpiece surface, a cylindrical tail section extending from the other end thereof, a tapered surface varying in radial thickness in a longitudinal direction from a minimum radial thickness at a point adjacent said cylindrical tail section to a maximum radial thickness at a location spaced from said other end, and a shank portion intermediate said enlarged head and said tapered surface, said shank portion having an outer surface formed to be placed in the workpiece opening, and an internal bore extending through said expander means carrying said mandrel shank portion;

expandable sleeve means carried on said mandrel shank portion proximate said enlarged head, said sleeve means including a first portion of greater radial thickness adjacent one end thereof facing said enlarged head and a second portion of reduced radial thickness adjacent the other end thereof facing said expander means other end, said sleeve means having a discontinuity in the inside surface thereof between said first portion and said second portion, said portion having an inner diameter substan-

tially equal to the outer diameter of said cylindrical tail section and having a length which is greater than that of said cylindrical tail section, said second portion being adapted to be advanced along said expander means cylindrical tail section and tapered surface and expanded thereover upon advancement of said mandrel toward the inaccessible workpiece surface, said sleeve means forming a radially outwardly extending bulb at a location axially spaced from the inaccessible workpiece surface at approximately said inside surface discon tinuity prior to contacting the inaccessible workpiece surface, said other end of said sleeve means ultimately contacting the inaccessible workpiece surface causing said outwardly extending bulb to expand radially and to propagate axially in a ripple manner toward the inaccessible workpiece surface and finally bear thereagainst over a selected area radially spaced from the area of contact of said sleeve means other end; and

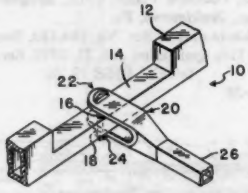
locking means operatively arranged between said expander means and said mandrel for locking said mandrel and said expander means together to eliminate relative motion therebetween in one direction.

4,364,698

HITCH PIN

Raymond S. Hardy, R.R. #1, Bronson, Iowa 51107

Filed Sep. 18, 1980, Ser. No. 188,353
Int. Cl.³ B60D *1/02*; F16B *19/00*
U.S. Cl. 411—351 **5 Claims**



1. A hitch pin for use in a trailer hitch assembly which is adapted to absorb shock imposed thereon comprising a core, said core consisting of an elongated cylindrical member formed of spring steel, a handgrip rigidly secured to one end of said core, a resilient sleeve mounted on said core and extending the full length thereof, a plurality of bushings slidably positioned on said sleeve, said bushings completely covering said sleeve, and a fastener extending through said core, sleeve, and the bushing adjacent the end of said core to secure the bushings thereon in a manner so that the bushings can move relative to each other.

4,364,699

WHEELCHAIR TABLE AND FOOD TRAY FOR HANDICAPPED PERSONS

Cecilia R. Koppes, 417 C St., Washington, Kans. 66968

Filed Aug. 7, 1980, Ser. No. 176,053
Int. Cl.³ A47G *21/00*
U.S. Cl. 414—9 **11 Claims**

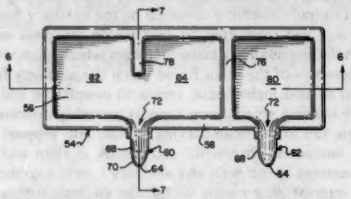
1. A device for aiding a handicapped person in eating comprising:

a relatively shallow, flat, rectangular food tray; and

an elongated, open top, relatively narrow mouthpiece integral with the tray and extending outwardly from one longitudinal edge of the tray intermediate and spaced from both ends of the tray,

said mouthpiece communicating with the tray for reception of food moved into the mouthpiece from the tray,

said mouthpiece and the food thereon being adapted for reception into the mouth of said person for removal of the food by said person from the mouthpiece,



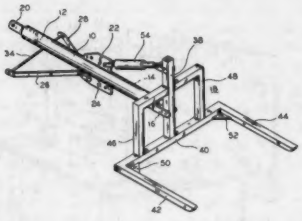
said tray being, except for said mouthpiece, closed along its entire periphery by integral, continuous, upstanding, low profile, food retention means of uniform height.

4,364,700

BALE-HANDLING APPARATUS

John Arabshian, Rte. 3, Wapaca, Wis. 54981, and Paul O. Mittelstaedt, Rte. 1, Box 61, Weyauwega, Wis. 54983

Filed Oct. 20, 1980, Ser. No. 198,773
Int. Cl.³ A01D *87/12*; B66F *9/00*
U.S. Cl. 414—24.5 **3 Claims**



1. An apparatus for handling forage bales, connectable to the three-point hitch of a tractor, comprising:

a unitary support bar comprising a single metal member extending outwardly away from the back of the tractor;

an upper flange secured to the uppermost side of said support bar;

a lower flange secured to the underside of said support bar aligned approximately vertically beneath said upper flange;

an end flange, secured to one end of said support bar, and pivotably attached to the pivot point on said tractor usually occupied by the stabilizer arm of the three-point hitch;

connecting means for connecting said one end of said support bar to the three-point hitch such that said support bar is held approximately horizontally outwardly from the tractor, including two support arms connected between one of said upper and lower flanges and the power arms of the three-point hitch;

carrying means, pivotably connected to the opposite end of said support bar, for sliding under and carrying the forage bales; and

pivoting means comprising a single hydraulic cylinder one end of which is connected to the one of said upper and lower flanges opposite the one to which said two support arms are attached, and the other end of which is connected to said carrying means at a point different than where said support bar is connected to said carrying means, for pivoting said carrying means on its pivotable connection to various angles with respect to said support bar,

said hydraulic cylinder being hydraulically connected to the tractor such that the action of said hydraulic cylinder, and

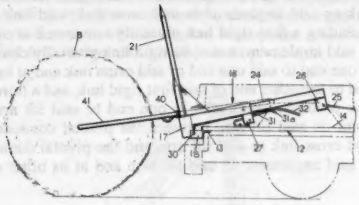
hence the pivoting of said carrying means, is controlled from the tractor.

4,364,701

COMBINED HAY BALE TRANSPORTING AND UNROLLING MECHANISM

Bobby R. Lynch, and Robert L. Lynch, both of R.R. #2, Box 57, Ozark, Mo. 65721

Filed Dec. 4, 1980, Ser. No. 212,838
Int. Cl.³ A01D *87/12*
U.S. Cl. 414—24.6 **15 Claims**



1. A combination bale handling and unrolling mechanism adapted to mounting on the bed portion of a pick-up truck, or the like, comprising

a base member attached to said truck bed portion,

a T-shaped finger support member having its cross-member pivotally mounted adjacent the rearward end of said base member and said truck bed portion,

a plurality of elongated finger members attached to and projecting rearwardly from the said pivotally-mounted cross-member in its lowered position adapted to penetrate and support the bale,

cable means connected to the free end portion of the central member of said T-shaped finger support member,

winch means mounted on said base member spaced from said pivotal T-shaped finger support member and connected to the other end of said cable means adapted to raise and lower the finger-supported bale,

spring means mounted between the said pivotal T-shaped finger support member and said base member adapted to maintain continuous tension on said cable means, and

a pair of U-shaped arm members each having one leg portion telescopically and pivotally mounted parallel and adjacent to the cross-member of T-shaped finger support member, each arm having a pointed tip on its other free leg portion adapted to penetrate the bale center, the base portion of each U-shaped arm member having a greater dimension than the bale radius for its unrolling on forward movement of said bale handling and unrolling mechanism,

whereby said pivotally-mounted T-shaped finger support member is adapted to operate through essentially a right-angle between its lowered and raised positions and said pair of U-shaped arm members is adapted to operate through essentially about 180° between their operative and stored positions.

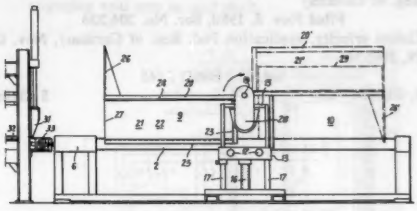
4,364,702

APPARATUS FOR STACKING OBJECTS OR GROUPS OF OBJECTS

Serge Coussot, Bersac, France, assignor to Etudes et Realisations Industrilles de Bersac (E.R.I.B.), France

Filed Oct. 6, 1980, Ser. No. 194,025
Claims priority, application France, Oct. 9, 1979, 79 25069
Int. Cl.³ B65G *57/081*
U.S. Cl. 414—31 **6 Claims**

1. Device for stacking objects head to tail such as groups of several stacked cartons having one thickness at one end and a greater thickness at the opposite end, comprising a stationary frame which supports a conveyor having belts spaced in the crosswise direction extending between a receiving zone and a delivery zone, a turning device having two arms each supported by a means of movement in rotation and translation, each means being placed between the receiving zone and delivery zone on both sides of the conveyor, the arms extending in a vertical plane parallel to the belts, two opposite vertical walls being fastened respectively to the arms, a crosswise edge extending between the two vertical walls in the vicinity



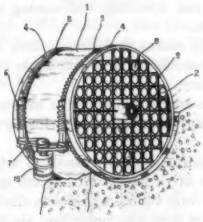
of the crosswise shaft, two bottom edges attached respectively to the vertical side walls being at the level of the belts, when the turning device is placed at the receiving zone for loading this device with cartons, the arms being able to turn 180° to put the turning device above the delivery zone, the bottom edges then being spaced fron this zone in the vertical direction and the cartons contained in the device being held above this zone by the effect of the side walls thrust toward one another by jacks.

4,364,703

ROTARY PARKING STRUCTURE FOR PASSENGER CARS

Yang-Kuang Pai, 2F No. 27, Lane 305, Wo-Lung St., Taipei, Taiwan

Filed Mar. 14, 1980, Ser. No. 130,447
Int. Cl.³ E04H *6/16*
U.S. Cl. 414—250 **3 Claims**



1. A rotary vehicle parking structure, comprising:

a storage structure comprising an axle, a lattice structure secured to said axle and forming a plurality of parking compartments and a circular casing surrounding and attached to said lattice structure, said parking compartments each including a plurality of circular rails attached to said lattice structure, a rotatable cylindrical tube within said rails, said tube open at both ends and having a parking platform mounted therein, and a plurality of rollers disposed between said rails and said tube;

support means comprising a central support means including said axle, and an external support means comprising a base having a semicircular cavity, circular guide rails attached to the peripheral edges of said circular casing and a plurality of bearing rollers disposed between said cavity and said circular guide rails;

means for rotating said storage structure comprising a power means connected to at least one pinion gear and at least

one circular rack secured to the outer surface of said circular casing and engaging said at least one pinion gear.

4,364,704

GRAB BUCKET SUSPENDED FROM HOISTING INSTALLATION

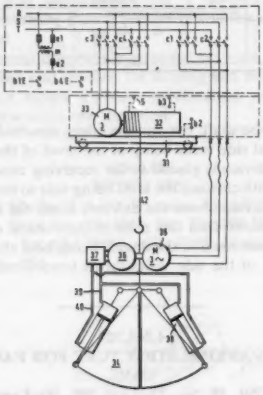
Peter Dreesen, Essen, and Klaus Kiessling, Wetter, both of Fed. Rep. of Germany, assignors to Mannesmann-Demag AG, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 204,234

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1979, 2945746

Int. Cl.³ B86D *1/48*

U.S. Cl. 414—624 5 Claims



1. An apparatus for lifting material from a pile, which comprises:

(a) a grab bucket being operative to open and close,

(b) a hoisting means including a cable for suspending said grab bucket and lowering and raising said grab bucket from said pile,

(c) said hoisting means including a first reversible motor drive means associated with said cable to raise and lower said grab bucket,

(d) a second reversible motor drive means associated with said grab bucket for opening and closing said grab bucket, and

(e) electrical control means associated with said first and second motor drive means and including:

(i) a slackline limit switch to detect a slackening condition in said cable whereby upon said slackening condition said limit switch stops said first motor drive means and starts said second motor to close said grab bucket, and

(ii) timer relay means associated with said slackline limit switch and operative after predetermined time out periods to operate said first and second motor drive means in a predetermined sequence to close said bucket, raise said closing bucket above the pile, suspend the bucket above the pile until it is fully closed and raise the bucket to a destination position.

4,364,705

LOADER MECHANISM

John F. Shumaker, Mt. Pleasant, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Jul. 7, 1980, Ser. No. 166,061

Int. Cl.³ E02F *3/00*

U.S. Cl. 414—713 8 Claims

1. An improved loader, comprising:

(a) a frame;

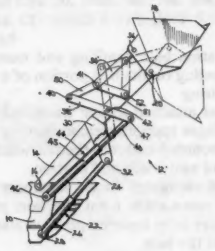
(b) a material-handling implement, disposed at the front end of said frame;

(c) a lift arm pivoted at one end to said frame and at the opposite end to said implement;

(d) first fluid ram means, pivotally joining said frame and said lift arm, for moving said implement relative to said frame between a raised position and a lowered position;

(e) a cross link pivoted at a point intermediate its ends to said lift arm;

(f) link means, pivotally connected at one end to said implement at a distance spaced from the pivotal connection between said lift arm and said implement and pivotally connected at its other end to one end of said cross link, for linking said implement to said cross link; said link means including a first rigid link pivotally connected at one end to said implement, a second rigid link pivotally connected at one end to said one end of said cross link and at its other end to the other end of said first rigid link, and a third rigid link pivotally connected at one end to said lift arm at a point on said lift arm between the pivotal connection of said cross link to said lift arm and the pivotal connection of said implement to said lift arm and at its other end to



said other end of said second rigid link, with said other end of said first rigid link being pivotally connected to said third rigid link; and

(g) second fluid ram means, pivotally connected at one end to said frame and at the opposite end to the other end of said cross link, for rotating said implement relative to said lift arm between a rolled back position and a dump position, the dig position of said implement lying between said rolled back and said dump positions, the piston rod portion of said second fluid ram means being pivotally connected to said cross link and being disposed parallel to said first rigid link when said implement is in the dig position, whereby the maximum force available from said second fluid ram means is used to pivot said implement from the dig position to said rolled back position, and the extension and retraction of said first fluid ram means raising said lift arm relative to said frame and forcing said cross link to rotate said implement to compensate for the rotation of said implement induced by the rotation of said lift arm alone, whereby said implement when in the rolled back position remains essentially in the same orientation relative to said frame while said implement is moved by said lift arm between lowered and raised positions.

4,364,706

CARRIER APPARATUS FOR VERTICAL AND HORIZONTAL TRANSPORTATION OF LOADS

Reinhard Kranzlmüller, Bahnhofstrasse 28, A 6850 Dornbirn, Vorarlberg, Austria

Filed Jun. 25, 1980, Ser. No. 162,742

Int. Cl.³ B66F *9/14, 9/07;* B65G *1/04*

U.S. Cl. 414—733 7 Claims

1. Apparatus for transporting articles including carrier means and bracket means, said bracket means comprising:

first arm means having a first end mounted for pivotal mo-

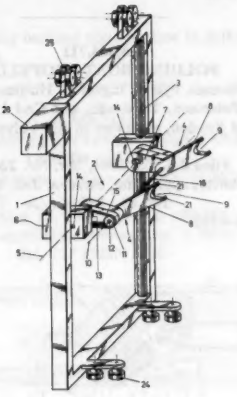
tion relative to said carrier means about a first generally horizontal pivot axis and a second end opposite said first end;

second arm means mounted at one end thereof to said second end of said first arm means for pivotal motion relative thereto about a second generally horizontal pivot axis;

said second arm means having at the other end thereof opposite said one end engaging means for enabling said articles which are to be transported to be held at said other end of said second arm means;

drive means for driving said first arm means to effect pivotal motion thereof about said first pivot axis;

interconnecting drive means operatively engaged between said first arm means and said second arm means to effect pivotal motion of said second arm means relative to said first arm means about said second pivot axis;



said interconnecting drive means including

a first drive element mounted for rotation with said first arm means,

a second drive element connected with said second arm means, and

an interconnecting element for effecting rotation of said second drive element upon rotation of said first drive element;

said interconnecting drive means being structured and dimensioned to maintain said other end of said second arm means moving along a path which is substantially linear and horizontal relative to said first pivot axis and which extends substantially perpendicular to said first pivot axis;

said apparatus further comprising means for moving said bracket means vertically upwardly and downwardly upon said carrier means.

4,364,707

OBJECT TRANSPORT APPARATUS

James D. Ott, Mesa, Ariz., assignor to Advanced Semiconductor Materials Die Bonding Inc., Chandler, Ariz.

Filed May 6, 1980, Ser. No. 147,227

Int. Cl.³ B25J 9/00

U.S. Cl. 414—744 B **10 Claims**

1. An object transport apparatus for conveying at least one object from a first reference surface position to a second reference surface position, comprising:

pickup means having a pickup surface for releasably engaging said object;

said pickup means including an elongated arm member;

said pickup surface defining at least a vacuum orifice;

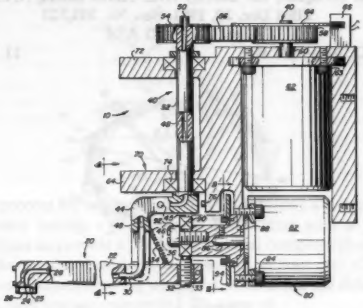
said pickup means further having a selectively operable vacuum source open to said vacuum orifice;

transport means cooperatively connected to said pickup means for swinging said pickup surface from said first reference position through an arcuate path having an independently selectively variable range of elevations to said second reference position;

said transport means having a frame;

said transport means further having a shaft rotatably supported about an axis by said frame for rotating said arm in a reversible angular motion over an arcuate range;

said transport means including pivot means for pivotally engaging said arm to said shaft;



said transport means yet further comprising cam means supported by said frame for pivoting said arm in a reversible pivotal motion about said pivot means over a pivotal range;

said arm having a cam follower surface for contacting at least a portion of said cam means; and

said cam follower surface having symmetry about said shaft axis so that said cam means can independently deflect said pickup surface to any elevation position of said arm within said arcuate range.

4,364,708

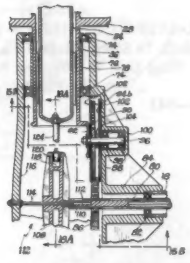
WINDMILL

Constant V. David, 4952 Field St., San Diego, Calif. 92110

Filed Aug. 27, 1981, Ser. No. 296,973

Int. Cl.³ F03D 7/02

U.S. Cl. 416—132 B **13 Claims**



1. A windmill comprising:

a hub;

means for supporting the hub for rotation about a substantially horizontal axis;

a plurality of blades each having a root, a tip and a spanwise twistable intermediate section;

linkages means for connecting the roots of the blades to the hub to permit selective independent rotation of the roots and the tips for varying the pitch and the spanwise twist of the blades independently;

an electric power generator;

means for providing a driving connection between the hub and the generator; and

control means connected to the linkage means for varying the pitch and the spanwise twist of the blades in accordance with a predetermined desired relationship that will optimize generation of electric power.

4,364,709

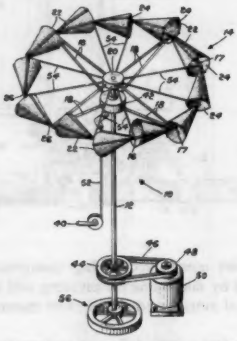
WIND POWER CONVERTER

August Tornquist, 125 Barclay Ave., Staten Island, N.Y. 10312

Filed Dec. 30, 1981, Ser. No. 331,523

Int. Cl.³ F03D *3/06*

U.S. Cl. 416—132 B **11 Claims**



1. A windmill for capturing wind comprising:

(a) a rotor assembly mounted for rotation about a first axis;

(b) said rotor assembly including a plurality of vane means radially spaced from said first axis at the periphery of said assembly and circumferentially spaced thereabout;

(c) each of said vane means being flexible and comprising a tapered configuration open at opposite ends thereof and having a substantially, continuous outer surface extending between said ends; and

(d) a plurality of rigid elongated rods spaced about the outer surface of each of said vane means, for substantially maintaining said tapered configuration of each of said vane means in response to impact with said wind.

4,364,710

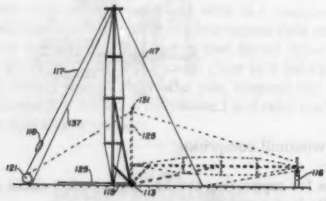
VERTICAL-AXIS WINDMILL OF THE CHINESE TYPE

James Campbell, 74 Sleepy Hollow La., Orinda, Calif. 94563

Filed Dec. 7, 1979, Ser. No. 101,114

Int. Cl.³ F03D *11/04*

U.S. Cl. 416—142 **1 Claim**



1. A windmill comprising a support for sails including a central support structure having a ground engageable end, at least one sail supported by said central structure, means for downwardly rotating said support structure for lowering said windmill without engagement of said sail with ground, a front cable secured from ground to the upper portion of said central support structure, a gin-pole secured normal to said ground engageable end of said central support structure and extending in alignment with said front cable such that when said windmill is rotated, in a lowering direction, said gin-pole will rotate upward and contact said front cable to maintain said front cable in an elevated position to provide leverage for assisting in lowering and subsequently in raising of said windmill, said ground engageable end of said central support structure secured upon a rotatable base with said rotatable base including a pivot behind said windmill, said windmill characterized by having a balance position when its center of mass is rotated, during raising, to a position directly above said offset pivot, a safety gauge rod rotatably hanging freely from said gin-pole to engage the ground upon raising of said windmill to prevent said windmill from falling from said balance position to an upright position.

4,364,711

FOLDING BOAT PROPELLER

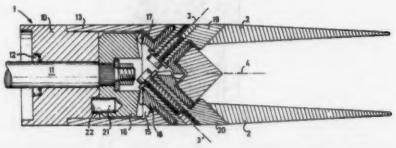
Lennart H. Brandt, Fjäras; Ingvar O. Hultmark, Hisings Kärra; Lars H. Petersson, Torslanda, and Carl U. Söderbaum, Askim, all of Sweden, assignors to AB Volvo Penta, Goteborg, Sweden

Filed Jan. 13, 1981, Ser. No. 224,799

Claims priority, application Sweden, Jan. 16, 1980, 8000362

Int. Cl.³ B63H *1/24*

U.S. Cl. 416—142 **9 Claims**



1. Boat propeller comprising a hub for attachment to a propeller shaft and at least two propeller blades carried by said hub, each of which blades has a suction side and a pressure side, and which are pivotally mounted in the hub so that they are movable between an unfolded operating position and a folded position in which the blades extend rearwards in the direction of the shaft, characterized in that the mounting axes of the blades are arranged at such an angle relative to the rotational axis of the hub that the blades are movable between the unfolded and the folded positions by rotation about the respective mounting axis at least essentially one-half turn, the hub having means for permitting limited rotation of the hub relative to a said propeller shaft, and transmission means arranged, upon said relative movement, to transmit torque to the propeller blades for rotating them between the folded and the unfolded positions.

4,364,712

CROSS FLOW COOLING FAN

Herbert N. Charles, Chatham, Canada, assignor to Canadian Fram, Chatham, Canada

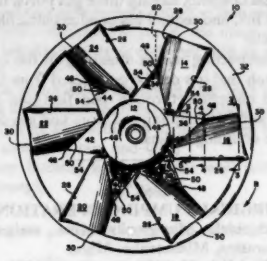
Filed Jul. 10, 1980, Ser. No. 168,233

Int. Cl.³ F04D *29/26*

U.S. Cl. 416—183 **8 Claims**

1. In a fan for imparting both axial and radial flow components to the air passing between the upstream and downstream sides of the fan, a hub, a plurality of circumferentially spaced fan blades, each of said fan blades having a leading edge and a trailing edge, characterized in that said fan includes backing plate portions associated with each of said blades, said backing plate portions being defined as circumferentially spaced sections of a common conical surface projecting from the down-

stream side of said hub, each of said blades being disposed in a plane oblique to the plane of said conical surface and intersecting its corresponding backing plate portion to define a joining edge therebetween.

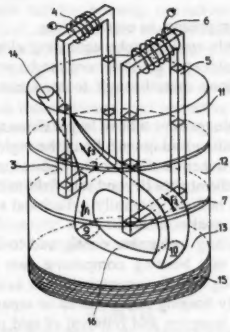


4,364,713

ELECTROMAGNETIC CONDUCTION-PUMP FOR LIQUID METAL

Henri Carbonnel, Antony, France, assignor to NOVATOME, Robinson, France

Filed May 23, 1980, Ser. No. 152,584
Claims priority, application France, Jun. 7, 1979, 79 14585
Int. Cl.³ H02N *4/20*
U.S. Cl. 417—50 **3 Claims**



1. An electromagnetic conduction pump for liquid metal, comprising

(a) a part of refractory material which can be submerged in a bath of liquid metal;

(b) a first magnetic circuit including a horizontal arm embedded in said refractory material and having a gap;

(c) a second closed magnetic circuit having a feed coil and including a horizontal arm embedded in said refractory material;

(d) a rising channel in said refractory material for pumping of said liquid metal passing through said gap in said first magnetic circuit and a closed turn of liquid metal communicating with said rising pumping channel at the location where it passes through said gap;

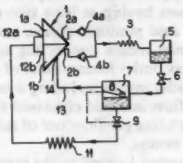
(e) said turn comprising a channel of inverted-U shape the median plane of which is a vertical plane passing through said gap in said first magnetic circuit, the legs of said U dipping into said bath of metal in order to close said turn, one of said legs consisting of a section of said rising channel and the other leg partially interlacing said horizontal arm of said second magnetic circuit.

4,364,714

PROCESS TO SUPERCHARGE AND CONTROL A SINGLE SCREW COMPRESSOR

Bernard Zimmern, Neuilly sur Seine, France, assignor to Uniscrew Limited, Hamilton, Bermuda

Filed Jun. 3, 1980, Ser. No. 156,110
Claims priority, application France, Jun. 19, 1979, 79 15675
Int. Cl.³ F04C *29/10*; F04B *49/02*; F01C *1/10*; F25B *31/00*
U.S. Cl. 417—53 **2 Claims**



1. A process for supercharging and controlling a composite compressor having a single screw cooperating with at least two pinions to provide a plurality of partial compressors equal in number to the number of said pinions, at least one of said partial compressors having means for controlling the delivery thereof, said process comprising the steps of:

injecting into a single one of said partial compressors a supercharging flow of gas at pressures intermediate compressor intake and discharge pressures; and

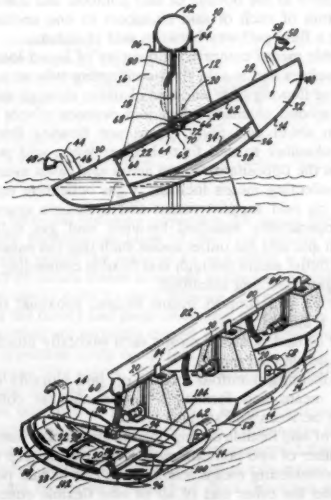
varying the delivery of said composite compressor from maximum delivery thereof by first reducing the deliveries of said partial compressors other than said single one partial compressor into which said supercharging flow is injected.

4,364,715

WAVE ACTUATED GAS COMPRESSION APPARATUS

Richard D. Bolding, P.O. Box 870, Rialto, Calif. 92376

Filed Feb. 11, 1980, Ser. No. 120,673
Int. Cl.³ F03B *13/12*; F04B *43/12*
U.S. Cl. 417—100 **4 Claims**



1. An apparatus for harvesting the wave energy of a body of

water by utilizing wave movement of the body of water to compress a gas which comprises:

a support means suitably anchored in a fixed position with respect to wave movement such that said support means is not substantially movable in response to wave movement;

a hollow pontoon means located adjacent to said support means, said pontoon means including a pivot means located on the external surface of said pontoon means, said pontoon means pivotally mounted about said pivot means to said support means and movable about said pivot means in respect to said support means in response to wave movement;

said pontoon means having at least two chambers located in the interior of said pontoon means, each of said chambers having a gas inlet means connecting to the ambient atmosphere and a gas outlet means, each of said gas inlet means and said gas outlet means including a one way valve means restricting gas flow into said chambers through said gas inlet means and restricting gas flow out of said chambers through said gas outlet means;

a gas collecting means located in the interior of said pontoon means and connecting the interiors of said chambers to each other;

a movable means located in the interior of said pontoon means and operatively associated with said chamber connecting means, said movable means sealing said chamber connecting means against gas flow between said chambers, said movable means moving within the interior of said pontoon means in response to movement of said pontoon means such that as said movable means moves within the interior of said pontoon means simultaneously the gas pressure in one of said chambers is increased while the gas pressure in the other of said chambers is decreased causing gas to flow through the outlet means of said chamber wherein said gas pressure is increased into said gas collecting means and causing gas to flow from the ambient atmosphere through the inlet means of said chamber wherein gas pressure is decreased;

said support means includes a pivot guide means mounted on said support means along the vertical axis of said support means;

said pivot means slidably attaching to said pivot guide means such that said pontoon means is capable of moving up and down in a vertical direction in respect to said support means;

said pontoon means comprises an elongated pontoon having a first chamber located at one end of said pontoon and a second chamber located at the other end of said pontoon;

said chamber connecting means comprises a fluid conducting tube located at the bottom of said pontoon and connecting the bottom of each of said chambers to one another and forming a fluid pathway between said chambers;

said movable means comprises a quantity of liquid located in said chambers and in said fluid conducting tube so as to be capable of flowing from said first chamber through said tube to said second chamber when said pontoon pivots in one direction about said pivot means and flowing from said second chamber to said first chamber when said pontoon pivots in the opposite direction about said pivot means;

said gas collecting means includes a gas collecting manifold located on said support means and a flexible connecting means operatively attached between said gas collecting manifold and said gas outlet means such that gas passes from said gas outlet means through said flexible connecting means to said gas collecting manifold;

a plurality of said support means located proximal to each other in a unified array;

a plurality of said pontoon means each pivotally attached to one of said support means;

said gas collecting manifold located on said plurality of said support means and forming a continuous gas collecting pathway between said support means;

a plurality of said flexible connecting means equal in number to said number of said pontoon means, one end of each of said felxible connecting means attaching to one of said pontoon means and the other end of all of said flexible connecting means attaching to said gas collecting manifold;

said gas outlet means comprises a first and a second gas conduit, one end of said first gas conduit attaching to the upper portion of said first chamber and one end of said second gas conduit attaching to the upper portion of said second chamber, and a gas coupling having three gas ports, the other end of both said first and second gas conduits attaching to two of said gas ports;

said flexible connecting means attaching to the other of said gas ports such that gas can be conducted from said first and said second chambers through said first and said second conduits to said gas coupling and from said gas coupling into said flexible coupling means.

4,364,716

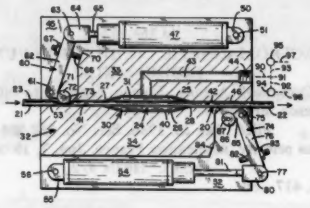
SURGICAL PUMPING OPERATION

Gilmore T. Schjeldahl, Minnetonka, Minn., assignor to Cathedyne Corporation, Minnetonka, Minn.

Filed Feb. 23, 1981, Ser. No. 236,899

Int. Cl.³ F04B *17/04, 35/04*

U.S. Cl. 417—394 **5 Claims**



1. A pump comprising, in combination:

an inner flexible resilient tube extending along an axis and having an inlet end, an outlet end, and a wall with a field of perforations therethrough located medially between said ends;

an outer flexible resilient tube of larger diameter coaxial with and surrounding said inner tube in the region of said field;

means sealing the ends of said outer tube around the wall of said inner tube at sites beyond said field to define between said tubes a hollow, generally cylindrical space of predetermined normal volume;

a housing defining a chamber configured to closely receive said tubes, said housing comprising two rigid portions meeting along a surface containing the axis of said tubes;

means mutually hinging said portions to separate along said surface, for insertion and removal of said tubes;

means in one of said portions connected to said chamber in the area of said field for subjecting said outer tube to positive and negative air pressures to compress and expand said outer tube; and

means carried by said housing and separately actuable to compressively close the ends of said inner tubes.

4,364,717

EXHAUST GAS TURBOCHARGER

Heinz Schippers; Werner Branscheid; Erich Lenk, and Udo Hardt, all of Remscheid, Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Jul. 3, 1979, Ser. No. 54,411

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1978, 2829150

Int. Cl.³ F01D *25/12, 25/18*

U.S. Cl. 417—407 **18 Claims**

1. An apparatus for turbocharging an internal combustion engine, and characterized by the ability to avoid excessive heat transfer to heat sensitive components thereof, said apparatus comprising

an exhaust gas turbine comprising a turbine housing and a turbine wheel,

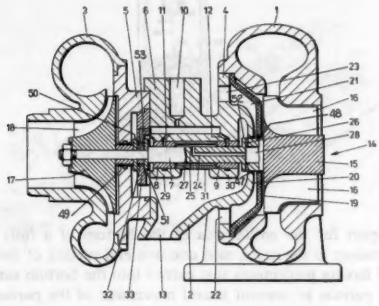
a rotary compressor comprising a compressor housing and a compressor wheel,

a shaft mounting said turbine wheel at one end thereof and said rotary compressor wheel at the other end thereof,

a bearing housing having an end wall with an opening therethrough,

bearing means rotatably mounting said shaft in said bearing housing so that said shaft extends through said opening of said end wall, and with said turbine wheel being disposed on the outside of said end wall,

said turbine housing having a rear wall with an opening therethrough,



means mounting said turbine housing to said bearing housing so that said turbine housing operatively encloses said turbine wheel, and with said shaft extending through said opening of said turbine housing rear wall and with said bearing housing end wall being opposed to and spaced from said turbine housing rear wall to define an annular cooling gap therebetween, and including aperture means permitting ambient air to flow through said cooling gap by natural convection during operation of the apparatus to cool the opposing surfaces of said end wall and said rear wall and thereby minimize heat transfer therebetween, and

means for directing a continuous stream of oil onto the surface of said bearing housing end wall to thereby cool the same.

4,364,718

DISPOSABLE PUMP FOR DISPENSING SMALL METERED AMOUNTS OF LIQUID FROM A CONTAINER AND A CONTROL UNIT FOR OPERATING SAID PUMP

Jacobus H. Beun, Maassluis, and Jan van Duijn, Vlaardingen, both of Netherlands, assignors to Internationale Octrooi Maatschappij "Octropa" BV, Rotterdam, Netherlands

Filed Feb. 24, 1981, Ser. No. 237,706

Int. Cl.³ F04B *39/10*; B67D *3/00*

U.S. Cl. 417—500 **10 Claims**

1. A disposable pump for dispensing small metered amounts of liquid from a container having only one mouth opening with adjacent connecting means for the pump,

said pump comprising a housing and a cylindrical piston,

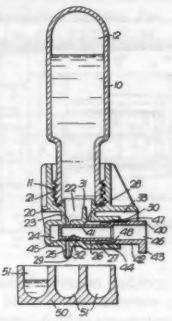
said housing having a first bore, closed at one end, for slidably and rotatably accomodating the piston, a second bore disposed perpendicularly with respect to the first bore, connecting means for co-operating with those of the container being arranged adjacent the outer end of the second bore,

said first bore comprising a narrow inward section and a coaxial wider section,

said narrow section communicating through a supply conduit with the second bore and through a dispensing conduit with a dispensing orifice opening outside the housing,

the wider section communicating near its upward end portion through a gas inlet conduit with the second bore,

said piston comprising a thinner inward section, closely fitting in the narrow section and provided with at least one groove at least partly extending longitudinally with respect to the piston up to the inward end thereof and being



arranged such as to prevent simultaneous communication with both the supply conduit and the dispensing conduit,

said piston having a coaxial cylindrical sealing lip elastically bearing against the inner surface of the wider section of the first bore,

said piston also having coupling means for connection with a control unit for transmitting both longitudinal and rotational movement to the piston.

4,364,719

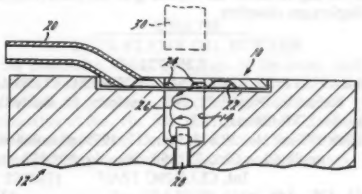
SPRAY APPARATUS FOR METAL FORMING AND GLASSWARE FORMING MACHINES

Walter E. Levine, Port Huron, Mich., assignor to Acheson Industries, Inc., Port Huron, Mich.

Filed Aug. 27, 1981, Ser. No. 297,017

Int. Cl.³ B30B *15/08*; B29C *1/00*

U.S. Cl. 425—78 **8 Claims**



1. A lubricant spraying apparatus for metal forming and glassware forming machines of the type having a forming cavity into which the material to be formed is placed, and a plurality of nozzle means arranged to discharge fluid lubricant into the cavity prior to each forming operation such that the walls of the cavity and parts associated therewith in the forming operation are properly coated with the lubricant,

said apparatus being comprised of,

a spray ring means which is positioned generally around the opening of the cavity,

said plurality of nozzle means being positioned on the spray ring and being operative to discharge fluid lubricant into the cavity in a helical tangential flow pattern,

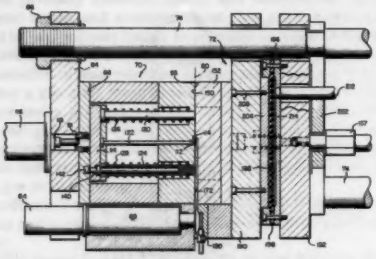
conduit means for connecting the nozzle means and spray ring means to a source of fluid lubricant whereby a predetermined amount of lubricant can be supplied to the cavity at desired intervals of operation.

4,364,720

MOLDING MACHINE AND SYSTEM FOR ACCOMODATING A PLURALITY OF SUCH MACHINES

Francis E. Ryder, Arab, Ala., assignor to Ryder International Corporation, Arab, Ala.

Filed Dec. 22, 1980, Ser. No. 218,628
Int. Cl.[3] B29F 1/06
U.S. Cl. 425—144 9 Claims



1. An injection molding machine including means for injecting thermoplastic material into a mold cavity defined by at least two mold components, which components are capable of being placed in preloaded, clamped abutting relationship means for producing relative movement and preloading of said mold components, said means comprising a first stationary platen for accomodating one of a pair of mold components, and a second, relatively movable platen for accomodating the other of a pair of mold components, said second relatively movable platen comprising, a forward plate member and rearward plate member, means for fixing the position of the rearward plate member, resilient diaphragm means interposed intermediate said forward and said rearward plate member, said resilient diaphragm means providing a diaphragm chamber and means for pressurizing said diaphragm chamber with a fluid medium to expand said resilient diaphragm means, and to force said forward plate member away from said fixed rearward plate member and toward said stationary platen, such that the abutting mold components carried by said first and second platens will be brought into clamped, preloaded relation preparatory to the injection of thermoplastic material as a step in the molding process the resiliency of said diaphragm means serving to aid in the expelling of the fluid medium from said diaphragm chamber.

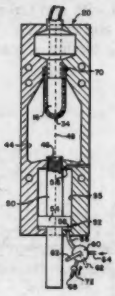
4,364,721

APPARATUS FOR BLOWING ORIENTED CONTAINERS

Dewey Rainville, Westfield, N.J., assignor to Rainville Company, Inc., Middlesex, N.J.

Division of Ser. No. 30,813, Apr. 17, 1979, abandoned. This application Oct. 7, 1980, Ser. No. 194,853
Int. Cl.[3] B29C 17/07
U.S. Cl. 425—149 12 Claims

1. Apparatus for blowing plastic containers and bottles or the like including a parison-forming injection mold including a core rod around one end length of which a parison is molded, a blow mold to which the core rod and its parison are shifted from the injection mold, said blow mold including means forming a blow-mold cavity in substantial alignment with the core rod, a substantially solid piston rod that slides longitudinally in a guide at the end of the cavity opposite the core rod and in alignment with the core rod, an end portion of the piston rod that confronts and contacts with the end of the parison when the piston rod is advanced to its limit of movement toward the end of the parison and core rod, means for retracting the piston rod away from the core rod as the parison moves away from the end of the core rod at the start of a blowing operation in the blow mold, the end portion of the piston rod having a substantially continuous concave surface into which the confronting end of the parison extends to hold the confronting end portion of the parison against lateral movement with respect to the longitudinal axis of the core rod and the piston rod during the blowing of the parison to the shape of the cavity of the blow mold, means for stopping the travel of the piston rod when the end portion of the piston rod reaches a position where it cooperates with an annular bottom of the blow mold that surrounds said piston rod in the end of the cavity remote from the core rod so that the bottom of the blow mold and the concave end surface of the piston rod provide a



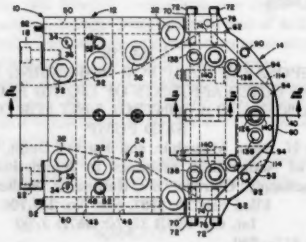
support for the entire area of the bottom of a fully blown container in the mold, said concave end surface of the piston rod having projections that extend into the bottom surface of the parison to prevent lateral movement of the parison with respect to the concave end surface of the piston rod, said projections extending beyond the concave end surface of the piston rod for a distance less than the thickness of the blown parison.

4,364,722

FOAM EXTRUSION DIE ASSEMBLY

Arthur L. Phipps, Tallmadge, Ohio, assignor to U.C. Industries, Tallmadge, Ohio

Filed Apr. 2, 1981, Ser. No. 250,273
Int. Cl.[3] B29F 3/04
U.S. Cl. 425—192 R 32 Claims



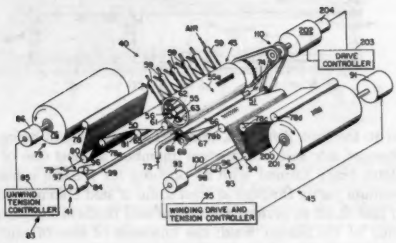
16. An extrusion die assembly comprisingg a die body, a pair of spaced lip members having opposed arcuate lips defining an orifice therebetween, each lip member further having an axially extending flexible leg to the rear of said arcuate lip and a foot at each end of said leg opposite said lip, and means for adjustably securing each foot to said die body and for pivoting each lip about its flexible leg to provide a desired die orifice size and shape, said means for pivoting including lip adjustment means engaged with said lips for positively driving said lips both towards and away from one another thereby to cause said lips to pivot about the flexing legs so as to vary both the size and shape of the orifice.

4,364,723

APPARATUS FOR TEXTURING A THERMOPLASTIC FILM

Paul R. Louis, Green Township, Hamilton County; Eugene R. Sorensen, Springfield Township, Hamilton County, and Thomas R. Ballard, Sycamore Township, Hamilton County, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 36,254, May 4, 1979, Pat. No. 4,259,286.
This application Aug. 20, 1980, Ser. No. 179,907
Int. Cl.³ B29C *17/04, 17/03*
U.S. Cl. 425—384 4 Claims



1. An apparatus for texturing a running ribbon of thermoplastic film material comprising:

a frame;

a texturing means for imparting a multiplicity of nubbles to said thermoplastic film material said texturing means comprising a texturing cylinder having a radially outwardly surface, said surface having a closely packed array of tapered holes, and having a multiplicity of particles adhered to said radially outwardly surface and to the walls of said tapered holes;

first means for forwarding a smooth, running ribbon of thermoplastic film into contact with said texturing means;

second means for forwarding said running ribbon of thermoplastic film from said texturing means;

tension maintaining means for maintaining substantially constant predetermined levels of tension in said film being forwarded into contact with and from said texturing means;

isolating means for sufficiently isolating a portion of said film while said isolated portion is in contact with said texturing means from said levels of tension so that said portion of film can be heated to above its thermoplastic temperature without being macroscopically distended;

heating means for heating said portion of said film to a temperature above the thermoplastic temperature of said film;

urging means for urging said portion of said film against said texturing means with a pressure sufficient to impart a multiplicity of nubbles to said film;

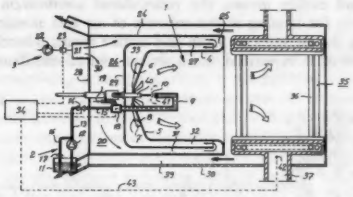
cooling means for sufficiently cooling said portion of said film before said film is forwarded from said texturing means to cause the nubbles to be set in said film, and to enable said predetermined level of tension to be applied to said film being forwarded from said texturing means without causing said film to be substantially distended in the machine direction.

4,364,724

METHOD AND APPARATUS FOR DOSING AN AIR-FUEL MIXTURE IN BURNERS HAVING EVAPORATING TUBES

Jan A. Alpkvist, Linköping, Sweden, assignor to Förenade Fabriksverken, Eskilstuna, Sweden

PCT No. PCT/SE79/00121, § 371 Date Feb. 2, 1980, § 102(e) Date Feb. 1, 1980, PCT Pub. No. WO80/00034, PCT Pub. Date Jan. 10, 1980
PCT Filed May 28, 1979, Ser. No. 190,672
Claims priority, application Sweden, Jun. 2, 1978, 7806536
Int. Cl.³ F23D *11/44*
U.S. Cl. 431—11 7 Claims



1. Method of dosing the air-fuel mixture in burners of the type which is formed with an evaporator tube through which fuel and some amount of combustion air is introduced in the combustion chamber and is mixed in said chamber with further combustion air and is inflamed, characterized in that the optimum amount of combustion air is determined for different types of fuel and different reference temperatures in a predetermined point of the evaporator tube adjacent the mouth thereof in the combustion chamber, and the temperature of the air-fuel mixture is measured in the said point of the evaporator tube and the actual temperature is compared with a predetermined reference temperature at a given amount of injected fluid, and for an actual temperature below and above respectively the reference temperature the amount of combustion air is reduced and increased respectively in proportion to the measured temperature difference until the actual temperature has increased and dropped respectively to the reference temperature, whereby the burner in the combustion chamber gets the predetermined optimum amount of combustion air.

4,364,725

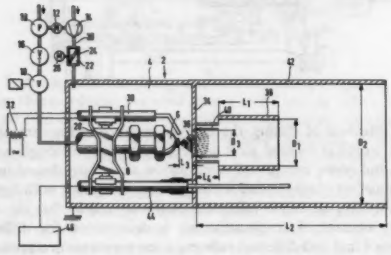
BLUE-FLAME OIL BURNER

Winfried Buschulte, Celle, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 859,716, Dec. 12, 1977, abandoned.
This application Dec. 7, 1981, Ser. No. 328,004
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1977, 2700671
Int. Cl.³ F23D *13/40*
U.S. Cl. 431—116 6 Claims

1. An apparatus for burning oil and combustion air under relatively high pressure for producing a high-heat blue flame, comprising a burner having a chamber in which an oil atomizing device is located, means for introducing pressurized combustion air into said chamber for surrounding said oil atomizing device, an interior wall spaced from said oil atomizing device downstream therefrom, orifice means formed in said interior wall and communicating with said oil atomizing device, said oil atomizing device injecting oil under pressure therefrom for mixing with said combustion air, a flame tube joined to said interior wall in coaxial relation with respect to said oil atomizing device and defining the downstream portion of said burner, a mixing tube located interiorly of and coaxially with respect to said oil atomizing device and said flame tube and said orifice means and being disposed downstream of said orifice means and spaced from said interior wall, the area in said flame tube

that is located downstream of the downstream end of said mixing tube and that is spaced inwardly of the discharge end of said flame tube defining a combustion zone which is the region of highest temperature in said flame tube, said mixing tube having opening means formed in the upstream end thereof, wherein the space between said interior wall and the upstream end of said mixing tube provides for reentry into said upstream end of a portion of the combustion gases that are discharged from the downstream end of said mixing tube for recirculation thereof, said recirculated combustion gases being those gases in which the oil has not been completely oxidized, said recirculated gases being drawn from the combustion zone toward the upstream end of said mixing tube by the velocity of the mixed atomized oil and combustion air passing into said mixing tube from said orifice means, the recirculated combustion gases providing for heating of the mixture of air and atomized oil entering the mixing tube from said orifice means whereby the atomized oil is vaporized, the upstream end of said flame tube



being sealingly connected to said interior wall in which said orifice means is located, a freely open annular space being formed between the outer surface of said mixing tube and the inner surface of said flame tube, recirculation of the combustion gases occurring over substantially the entire length of said flame tube from said combustion zone to said mixing tube, the path of said recirculated combustion gases that emanate from the region of highest temperature in said flame tube being directed through said annular space into the upstream end of said mixing tube, the wall of said flame tube being relatively thin, wherein the freely open annular space as defined between said flame tube and said mixing tube is of sufficient dimension to provide for the free flow of said recirculating combustion gases therethrough to said mixing tube, said mixing tube having a ratio of length (L_1) to diameter (D_1) of between about 1.0 and 1.75, said flame tube having a ratio length (L_2) to diameter (D_2) of between about 2.0 and 5.0 and said flame tube being a diameter (D_2) which is about 2–2.5 times the diameter (D_1) of said mixing tube.

4,364,726

CERAMIC BURNER HEAD WITH SEPARATE FUEL AND OXIDIZER PASSAGES

Siegfried Förster, Alsdorf; Manfred Kleemann, Bergheim, and Berthold Sack, Aachen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Dec. 5, 1979, Ser. No. 100,634

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1978, 2853309

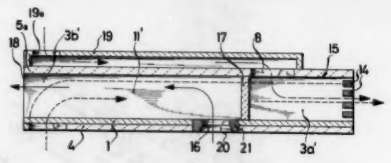
Int. Cl.³ F23D *11/44*

U.S. Cl. 431—215 **7 Claims**

1. A ceramic burner head comprising

an elongated ceramic body formed with at least two sets of longitudinally extending interleaved and staggered flow channels extending parallel to each other with the channels of one set off-set from the channels of the other set toward opposite sides of said body whereby partitions of the ceramic material of said body separate adjacent channels of the two sets and the channels of the sets alternate with one another, said channels opening substantially in a common plane at an end of said body to discharge respective fluids into a combustion chamber;

respective cover plates along said sides of said body for closing the channels of the respective sets while being provided with windows admitting a plurality of fluids to said channels including a combustion-sustaining oxidizing agent and a fuel whereby heat exchange is effected between said oxidizing agent and said fuel through said partitions between respective channels of said sets, all of said flow channels having elongated uniform flow cross sections in planes perpendicu-



lar to the flow direction, said fuel and said agent being discharged into said combustion chamber, at least one of said plates being formed with an opening for feeding a heating medium partly through at least some of said channels as one of said fluids to preheat another of said fluids in a preheating zone of the burner head, the channels of one of said sets being subdivided into two flow passages by respective separator walls;

means for passing said fuel through one of said passages; and

means for passing said heating medium through the other of said passages in a direction opposite to the flow of said oxidizing agent along adjacent channels of the other set.

4,364,727

HEAT TREATMENT OF FOODSTUFF

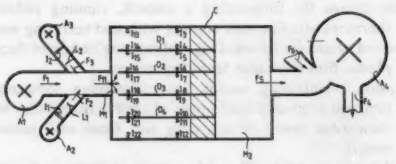
Bernard E. Enga, Maidenhead, England, assignor to Johnson, Matthey & Co., Limited, London, England

Filed Apr. 1, 1981, Ser. No. 249,981

Claims priority, application United Kingdom, Apr. 1, 1980, 8010893

Int. Cl.³ F27D *17/00*

U.S. Cl. 432—1 **9 Claims**



1. A method for the heat treatment of a foodstuff using apparatus comprising a pilot burner or electrical heating element and a catalytic combustor composed of a catalyst supported on a temperature stable and oxidation resistant monolith coated with a refractory oxide layer which comprises:

(a) preheating an oxygen-containing gas stream by means of said pilot burner or electrical heating element;

(b) combining a second oxygen-containing gas stream with the preheated oxygen-containing gas stream in a mixing zone;

(c) injecting fuel into the mixture of gas streams combined at (b);

(d) passing the mixture of gas streams and injected fuel from (c) through the catalytic combustor such that catalytic combustion of the fuel is initiated; and

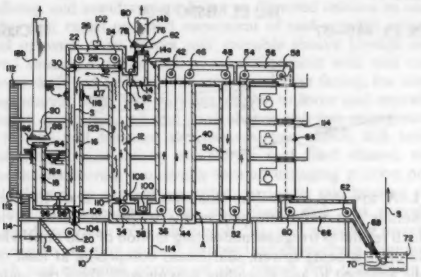
(e) contacting the foodstuff with the gas stream resulting from (d).

4,364,728

CONTINUOUS STRIP PREHEAT FURNACE AND METHOD OF OPERATION

Donald F. Stamp, North Benton, Ohio, assignor to The Electric Furnace Company, Salem, Ohio

Filed May 19, 1981, Ser. No. 265,153
Int. Cl.³ F27B *9/28*; F27D *1/18*; C21D *9/52, 9/54*
U.S. Cl. 432—8 23 Claims



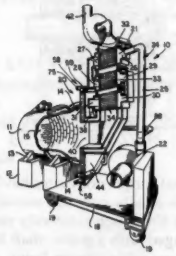
15. In a preheat furnace having a fully enclosed strip pass line, an unfired preheat chamber in contiguous communication with a fired preheat chamber, a flue gas exhaust stack secured to each of said chambers; and a temperature responsive adjustable damper and an adjustable exhaust stack cover for each of the exhaust stacks to selectively exhaust flue gases from said exhaust stack.

4,364,729

LADLE HEATING SYSTEM WITH AIR SEAL AND HEAT SHIELD

Haase D. Fresch, Lilburn, Ga., assignor to The Cadre Corporation, Atlanta, Ga.

Filed Jul. 10, 1980, Ser. No. 168,260
Int. Cl.³ F27D *3/00*
U.S. Cl. 432—9 23 Claims



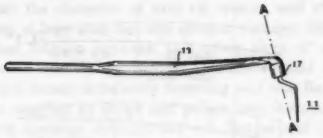
16. A method of heating ladles and the like comprising applying a lid to the rim of the ladle to substantially close the ladle, directing a flow of air about the external surface of the ladle at the rim of the ladle to collect heat emitted from the ladle at the rim of the ladle in the air, collecting the air directed about the rim of the ladle and moving the collected air first through a burner and then through the lid to the interior of the ladle, adding fuel to the air, burning the air and fuel in the ladle, and exhausting the combustion gases from the ladle through the lid.

4,364,730

PERIDONTAL PROBE

Per A. T. Axelsson, Drottninggatan 27, S-652 25 Karlstad, Sweden

Filed Oct. 21, 1981, Ser. No. 313,490
Claims priority, application Sweden, Oct. 31, 1980, 8007684
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—141 8 Claims



1. A peridontal probe for the investigation of a peridontal cavity comprising a handle portion, a pin member rotatably mounted on said handle portion about an axis of rotation, said pin member having a first and second end portion, said first end portion carrying attachment means for rotatably mounting said pin member on said handle portion and said second end portion being a free end portion and being straight and flat and terminating in a free end, said free end portion lying wholly to one side of said axis of rotation and being co-planar therewith, to define a space therebetween, said spacing between said free end portion and said axis of rotation being constant.

4,364,731

METHODS FOR PRODUCING ADHESIVE BONDS BETWEEN SUBSTRATE AND POLYMER EMPLOYING AN INTERMEDIATE OXIDE LAYER

Barry K. Norling, and James L. Bugg, Jr., both of San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Jan. 29, 1981, Ser. No. 229,752
Int. Cl.³ A61C *5/08, 5/10*
U.S. Cl. 433—218 13 Claims

1. A method for producing a dental crown composite comprising the steps of:

(a) providing a clean dental crown substrate surface;

(b) depositing onto the substrate surface an exogenous coating of inorganic oxide to a desired thickness on the substrate surface to enhance adhesion between the substrate and subsequently applied silane coupling agent;

(c) bonding a layer of silane coupling agent to the oxide coating; and

(d) applying a polymeric resin to the exposed silane coupling layer.

8. A dental crown composite comprising

a dental crown substrate;

a layer of exogenous inorganic oxide applied to a desired thickness to the surface of the substrate

a layer of silane coupling agent bonded to the layer of oxide; and

a coating of polymeric resin applied to the surface of the silane coupling layer.

4,364,732

SIMULATED INTERACTIVE DIVIDING AND ALLOCATING PROCESS

Uli H. Chi, Kent, and Mark R. Lembersky, Seattle, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

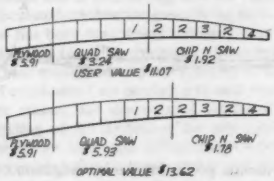
Filed Apr. 6, 1981, Ser. No. 251,557
Int. Cl.³ G09B *7/02*
U.S. Cl. 434—219 1 Claim

1. An interactive simulated process for segmenting and allocating objects including a user and a display and input unit coupled to a programmable data processing system having a memory, including the steps of:

loading a parameter table, utility table, series of objects including a preferred segmentation pattern and allocation, and an evaluation algorithm into the memory,

prompting the user to select at least one of the stored objects for visual display through the input unit,

displaying the geometric outline of the selected object on an area of the display and loading the object and its preferred segmentation and allocation into the memory,


1 2 2 3 2 4
PLYWOOD $ 5.91
QUAD SAW $ 3.24
CHIP N. SAW $ 1.92
USER VALUE $ 11.07
1 2 2 3 2 4
PLYWOOD $ 5.91
QUAD SAW $ 5.93
CHIP N. SAW $ 1.78
OPTIMAL VALUE $ 13.62

inputting a user decision with respect to at least where the object will be segmented,

executing the evaluation algorithm using the user decision for at least the segmentation and a default allocation,

storing the calculated utility and parameters in the memory, and

displaying a visual comparison of the user decision and of the preferred decision.

4,364,733

TRIMMER FOR MOTORBOATS

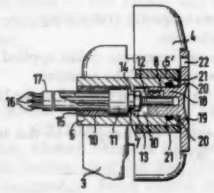
Ludwig Lohner, Gilching, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany

Filed Jul. 15, 1980, Ser. No. 169,136

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929420

Int. Cl.³ B63H 5/12

U.S. Cl. 440—2 8 Claims



1. A trimmer for indicating the trimming position of a drive mechanism of a motorboat wherein the drive mechanism is mounted to be rotatably movable in a gimbal ring by way of horizontal pins, said trimmer comprising a revolving part and a fixed part, both said revolving part and said fixed part being arranged within one of said horizontal pins, said fixed part being connected for rotation with the pin and the revolving part being connected for rotation with the gimbal ring, whereby said trimmer is protected from damage and requires no separate structural volume.

4,364,734

INFLATABLE MARINE CRAFT HAVING IMPROVED TOWING CHARACTERISTICS

Geoffrey J. S. Haughton, and Malcolm Bimpson, both of Sutton Coldfield, England, assignors to Dunlop Limited, London, England

Continuation of Ser. No. 901,639, May 1, 1978, abandoned. This application Apr. 8, 1981, Ser. No. 252,237 .

Claims priority, application United Kingdom, May 7, 1977, 19261/77

Int. Cl.³ B63C 9/04

U.S. Cl. 441—37 7 Claims

1. A towable, inflatable, floatable, marine craft having a generally flat underside and means to prevent nose diving which results in irregular undulating motion of said craft when said craft is being towed, said means comprising at least one vane attached to and extending downwardly from the underside of said craft, with its point of attachment being spaced back from the front edge of the underside, and suspended therefrom to form a pocket between the underside and the upper surface of the vane so that, when said craft is being towed, the upper surface of said at least one vane makes an angle of 90° or less with the underside of said craft, relative to the direction of towing.

4,364,735

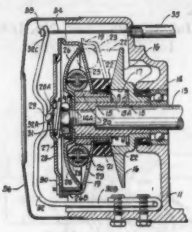
COMBINED TORQUE CONVERTER AND CLUTCH

Gerhard R. Plamper, Valley City; Paul R. Fortlage, Brunswick, and Hans-Hartmut Kaesgen, Berea, all of Ohio, assignors to MTD Products Inc., Cleveland, Ohio

Filed Aug. 7, 1978, Ser. No. 931,767

Int. Cl.³ F16H 55/52

U.S. Cl. 474—14 20 Claims



1. In a variable speed torque converter having a housing and a fixed sheave and an axially opposed movable sheave in the housing, said sheaves being non-rotatively mounted on a converter shaft interengaged with a motor shaft for rotation of the shafts together, said movable sheave being resiliently biased axially away from said fixed sheave, an endless belt reeved about said pair of sheaves for engagement with opposed faces of said sheaves, the belt being reeved about a pulley for driving interengagement of said belt and pulley, the said motor and converter being mounted to maintain tension on said belt, the motor and converter being resiliently biased toward said pulley to yield to said tension, the combination of a plate member in axial alignment with said converter shaft and engaged therewith for rotation with said converter shaft and said sheaves, said plate member and movable sheave having opposed faces defining an annular space therebetween concentric with said converter shaft, a spring-biased weight assembly in circular

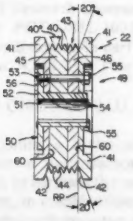
form disposed in said annular space and concentric with said converter shaft, said spring-biased weight assembly including a plurality of substantially equidistantly spaced weights distributed about said circular form and resilient means connecting said weights, said resilient means biasing said weights radially inwardly in said annular space, said weights under centrifugal force imparted thereto upon rotating of said sheaves and converter shaft being urged radially outwardly in said annular space in oppositions to said resilient means, the opposed faces defining said annular space being so disposed relative to each other that radial outward movement of said weights against said opposed faces forces said movable sheave toward said fixed sheave, a clutch disk in axial alignment with said converter shaft and said sheaves, said clutch disk facing, for interengagement with, said movable sheave to force said movable sheave axially toward said fixed sheave and into engagement with said belt between the sheaves, said clutch disk being resiliently biased axially away from said fixed sheave, said clutch disk having a centrally located engaging portion on a side thereof, an actuating member carried by said housing and extending diagonally across said clutch disk and movable toward and away from said clutch disk, said actuating member having an abutting portion disposed substantially in alignment with said engaging portion of said clutch disk in position to abut the said engaging portion of the clutch disk upon movement of the actuating member toward said clutch disk, said actuating member being resiliently biased away from said clutch disk to urge said abutting portion of the actuating member away from said engaging portion of the clutch disk, and connecting means connected to said actuating member to move the actuating member against the resilient bias imparted thereto toward the clutch disk and to cause the engaging portion of the clutch disk to press the clutch disk axially toward and against the movable sheave to move the same toward the fixed sheave, the spacing between the movable and fixed sheaves being such that in the non-driving position of the converter the movable sheave is out of engagement with the belt, that in low-speed position the movable sheave engages the belt and the belt and sheaves revolve about the axis of the converter, and that in higher-speed positions the movable sheave is moved axially toward the fixed sheave by the weights of the spring-biased weight assembly under centrifugal force moving radially outward in said annular space, the arrangement providing for clutching operation of the torque converter into and out of driving positions and the determination of the driving speed upon the axial spacing of the sheaves relative to each other under the action of the said spring-weight assembly in said annular space.

4,364,736

PULLEY AND METHOD OF MAKING SAME

G. Brian Hetz, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Jun. 4, 1980, Ser. No. 156,450
Int. Cl.³ F16H *55/36, 55/52*
U.S. Cl. 474—168 **10 Claims**



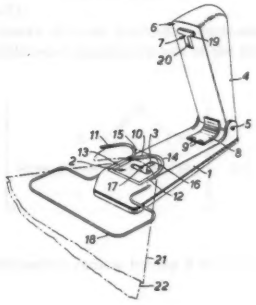
1. In a pulley having a plurality of annular grooves for receiving a V-ribbed endless polymeric power transmission belt which has a corresponding plurality of V-shaped belt elements, said pulley comprising a pair of annular side flanges each having a belt element supporting side wall and annular rib means between said flanges, each said flange having opposed sides one of which is disposed outboard of said rib means and the other of which is disposed adjacent said rib means, said rib means having belt element support side walls; the improvement in which said side flanges are separate substantially identical parts which are fully interchangeable on said pulley from side to side and have substantially equal diameters that are larger than the diameter of said rib means, said rib means comprising at least one disc-like annular member disposed in sandwiched relation between said other sides of said side flanges, each said flange having a recess in said one side thereof, and means detachably fastening said side flanges and rib means together to define said pulley; said fastening means comprising openings through said side flanges and rib means which are disposed in aligned relation, a hub member having a tubular central portion extending through a central bore in each of said flanges and rib means, said hub member having a hub flange provided with a plurality of threaded openings therein, and a plurality of fastening members extending through said openings in said side flanges and rib means, said fastening members having threaded outer ends being threadedly received within the threaded openings of said hub flange, said fastening means having outer end portions of said fastening members confined within said recess of one of said side flanges and said hub flange of said hub confined within said recess of the other of said side flanges whereby said fastening means is completely disposed inboard of said one sides of said side flanges.

4,364,737

METHOD FOR CONNECTING TOGETHER A PLURALITY OF WEBS OF FLEXIBLE MATERIAL

Terence D. Sowden, 32 Marlborough Rd., Idle, Bradford, BD 10 9SY, West Yorkshire, England

Division of Ser. No. 65,653, Aug. 10, 1979, abandoned. This application Jan. 15, 1981, Ser. No. 225,231
Claims priority, application United Kingdom, Feb. 28, 1979, 7907009
Int. Cl.³ B31F *1/00*
U.S. Cl. 493—346 **6 Claims**



1. A method for connecting together a plurality of webs of flexible material comprising: folding said plurality of webs, punching a hole through said folded plurality of webs so as to pass therethrough twice and define punched web portions and remaining openings each of which includes an enlarged head and a narrow shank that extends from the enlarged head and has a base at which the punched portion remains connected to the associated web, and then unfolding the punched webs such that the enlarged heads of certain of the punched portions are received within the narrow shanks of the openings left by other punched portions to thereby lock the webs together.

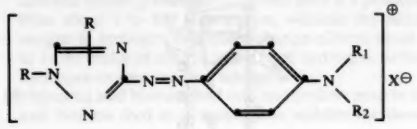
4,364,738

CRYSTALLINE BROMIDE OR IODIDE SALTS OF TRIAZOLE DYES FOR POLYACRYLONITRILE

Rudolf Zink, Therwil, and Peter Loew, Münchenstein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 23, 1981, Ser. No. 285,903
Claims priority, application Switzerland, Aug. 1, 1980, 5875/80
Int. Cl.³ C09B *44/18, 69/6*
U.S. Cl. 8—634 12 Claims

12. A process of dyeing or printing a textile which is dyeable with cationic dyes, comprising the step of contacting the textile with a dye of the formula



wherein

R is the CH_3 or C_2H_5 group,

R_1 is a C_1–C_4-alkyl group,

R_2 is an unsubstituted or substituted C_1–C_4-alkyl group, and

X is the bromine or iodine ion.

4,364,739

METHOD OF MAKING ELECTRICALLY CONDUCTING FIBER

Shinji Tomibe, Kyoto; Reizo Gomibuchi, Uji, and Kiyofumi Takahashi, Yawata, all of Japan, assignors to Nihon Sanmo Dyeing Co., Ltd., Kyoto, Japan

Division of Ser. No. 183,639, Sep. 3, 1980. This application Mar. 31, 1981, Ser. No. 249,416
Claims priority, application Japan, Mar. 5, 1980, 55-028386
Int. Cl.³ D06P *1/673, 1/41;* B05D *5/12*
U.S. Cl. 8—654 16 Claims

1. A method of making an electrically conducting fiber comprising subjecting at least one fiber selected from the group consisting of acrylic fiber and modacrylic fiber to a first heat-treatment in a bath containing a copper compound and a reducing agent to adsorb monovalent copper ions within the fiber, subjecting the fiber to a second heat-treatment in the presence of a sulfur-containing compound to convert said adsorbed monovalent copper ions to copper sulfide.

11. A method as claimed in claim 1 or 2 wherein the fiber from said second heat-treating step is dyed with a cationic dye.

4,364,740

METHOD FOR REMOVING UNDESIRED COMPONENTS FROM COAL

Lester G. Massey, Cuyahoga County, Ohio; Robert I. Brabets, DuPage County, and William A. Abel, Will County, both of Ill., assignors to CNG Research Company, Cleveland, Ohio

Continuation-in-part of PCT/US81/100273, Mar. 4, 1981, abandoned, which is a continuation-in-part of Ser. No. 127,740, March 6, 1980, Pat No. 4,313,737. This application Mar. 7, 1981, Ser. No. 261,470
Int. Cl.³ C10L *9/08, 1/32, 9/02*
U.S. Cl. 44—1 C 48 Claims

29. A method of treating a hydrocarbonaceous material containing an admixture of hydrocarbonaceous components and mineral components to increase the usefulness of the material as a fuel, comprising, in combination:

(a) admixing the hydrocarbonaceous material with a low molecular weight alcohol to form a slurry of alcohol and hydrocarbonaceous material;

(b) heating and pressurizing the slurry to a temperature and pressure above the critical temperature and critical pressure of the alcohol;

(c) maintaining the slurry at a supercritical temperature and pressure, prior to step (d), for a length of time sufficient to permit the alcohol to substantially saturate the hydrocarbonaceous material and achieve the desired degree of interaction with the hydrocarbonaceous components, thereby providing: (1) a dissolved portion of the hydrocarbonaceous components in alcohol; (2) an undissolved suspended portion of the hydrocarbonaceous material saturated with the alcohol; and (3) a discrete suspended portion of the mineral components;

(d) passing the slurry, in a substantially instantaneous manner, from the supercritical pressure to an expansion zone having a temperature and pressure below the critical temperature and critical pressure of the alcohol, thereby flash precipitating the dissolved portion of the hydrocarbonaceous components as discrete hydrocarbonaceous particles and providing a pressure differential between the alcohol saturating the undissolved suspended portion of the hydrocarbonaceous materials and the surface of said material sufficient to comminute the hydrocarbonaceous from the mineral components therein without substantially comminuting either the mineral components therein or the discrete undissolved suspended portion of the mineral components, thereby producing an admixture of the discrete hydrocarbonaceous particles and discrete mineral particles; and

(e) separating the discrete hydrocarbonaceous particles from the discrete mineral particles in a separation zone to provide an enriched hydrocarbonaceous fraction of material and an enriched mineral fraction of material.

43. The method of claim 29 further including contacting the slurry with a sulfur scavenging agent while the slurry is at a temperature of between about 200° F. and about 300° F. to remove sulfur from the slurry.

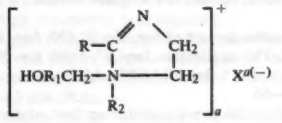
4,364,741

OIL SLURRIES OF CARBONACEOUS MATERIALS

Jose' L. Villa, Bridgewater, N.J., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed March 26, 1981, Ser. No. 247,702
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 8 Claims

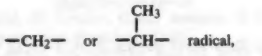
1. An oil slurry of solid particulate carbonaceous material having an imidazoline quaternary salt of the formula



wherein:

R is a hydrocarbon radical having 9 to 23 carbon atoms,

R_1 is a



radical,

R_2 is hydrogen, a unsubstituted aliphatic hydrocarbon radical having 1 to 6 carbon atoms, a hydroxy-substituted aliphatic hydrocarbon radical having 1 to 6 carbon atoms or a benzyl radical,

X is a water-soluble anion, and

a is a number equal to the ionic valence of the anion, X, present in an amount sufficient to stabilize the slurry at elevated temperatures.

4,364,742

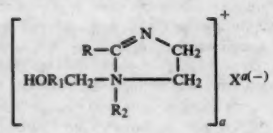
CARBONACEOUS MATERIALS IN OIL SLURRIES

Kathy A. Knitter, Morristown, and Jose' L. Villa, Bridgewater, both of N.J., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed April 1, 1981, Ser. No. 250,018
Int. Cl.³ C10L 1/32
U.S. Cl. 44—51 10 Claims

1. An oil slurry of solid particulate carbonaceous material having a mixture of

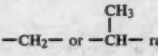
(a) from about 99% to about 75% by weight of an imidazoline quaternary salt of the formula



wherein:

R is a hydrocarbon radical having 9 to 23 carbon atoms,

R_1 is a



R_2 is hydrogen, an unsubstituted aliphatic hydrocarbon radical having 1 to 6 carbon atoms, a hydroxy-substituted aliphatic hydrocarbon radical having 1 to 6 carbon atoms or a benzyl radical,

X is a water-soluble anion, and

a is a number equal to the ionic valence of the anion, X, and

(b) from about 1% to about 25% by weight of a nitrogen base having from 0 to 9 carbon atoms, the mixture being present in an amount sufficient to stabilize the slurry at elevated temperatures.

4,364,743

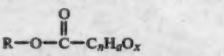
SYNTHETIC LIQUID FUEL AND FUEL MIXTURES FOR OIL-BURNING DEVICES

William E. Erner, 5840 New England Woods Dr., Burke, Va. 22015

Continuation-in-part of Ser. No. 72,699, Sep. 5, 1979, abandoned. This application June 17, 1980, Ser. No. 160,434
Int. Cl.³ C10L 1/18
U.S. Cl. 44—66 6 Claims

1. A combustible energy-producing fuel mixture consisting essentially of

(a) at least one fatty acid ester having the formula



wherein R is alkyl having from 1 to 12 carbon atoms; alkoxyalkyl where the alkoxy portion has from 1-4 carbon atoms and the alkyl portion is ethyl or propyl; cyclopentyl or cyclohexyl, or hydroxy ethyl or hydroxy propyl; n=11-22; a=2n+1, 2n−1, 2n−3, 2n−5 or 2n−7 and x is 0 or 1, and

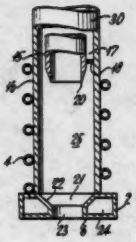
(b) a middle distillate fuel, wherein the ester and middle distillates have a ratio in the range of from about 10 to 75 to about 90 to 25 percent by weight based on the total weight of the mixture.

4,364,744

BURNER FOR THE PARTIAL OXIDATION OF SLURRIES OF SOLID CARBONACEOUS FUELS

William B. Crouch, Chappaqua, N.Y.; George N. Richter, San Marino, Calif.; Charles P. Marion, Mamaroneck, N.Y.; Blake Reynolds, Riverside, Conn.; Albert Brent, Huntington, and Edward T. Child, Tarrytown, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 107,215, Dec. 26, 1979, Pat. No. 4,338,099.
This application March 26, 1981, Ser. No. 247,967
Int. Cl.³ C10J 3/50
U.S. Cl. 48—86 R 17 Claims



1. A burner for mixing together a feedstream comprising a pumpable slurry of solid carbonaceous fuel in a liquid carrier with a separate feed stream comprising a free-oxygen containing gas optionally in admixture with a temperature moderator to produce a multiphase mixture and introducing said multiphase mixture into a partial oxidation gas generator comprising: a retracted central conduit coaxial with the central longitudinal axis of the burner and having an upstream inlet through which a first feedstream comprising said free-oxygen containing gas optionally in admixture with a temperature moderator may be separately introduced, and a downstream discharge outlet; an outer coaxial conduit concentric with said central conduit and having an upstream inlet through which a second feedstream comprising a pumpable slurry in the range of about 30 to 75 wt.% of solid carbonaceous fuel in a liquid carrier may be separately introduced, and an exit nozzle coaxial with and terminating said outer conduit at the downstream tip of the burner comprising a converging frusto-conical rear portion and a right cylindrical front portion which terminates at the downstream face of the burner, and the height of the front cylindrical portion of said exit nozzle is in the range of about 0.1 to 1.0 times its own diameter; a coaxial annular shaped cooling chamber surrounding said exit nozzle at the burner tip; wherein said central conduit discharge outlet is retracted upstream from the downstream face of the burner a distance of two or more times the minimum diameter of said outer conduit downstream exit nozzle to provide a pre-mix zone comprising a single communicating pre-mix chamber coaxial with the central longitudinal axis of said burner wherein intimate mixing together of the feedstreams takes place and a controlled amount of the liquid carrier is vaporized without burning; and means for radially spacing said central and outer conduits from each other to provide a coaxial annular passage through which said second feedstream may separately pass concurrently with said first feedstream into said pre-mix zone where a multiphase mixture is produced prior to being discharged through said outer conduit exit nozzle.

4,364,745

PLANT HYDROCARBON RECOVERY PROCESS

Thomas A. Weil, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed June 26, 1981, Ser. No. 277,836
Int. Cl.³ C10J 3/00
U.S. Cl. 48—209 8 Claims

1. A process which comprises hydropyrolysis in gas phase of

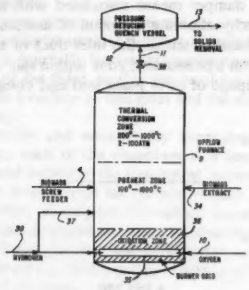
hydrocarbon containing whole plant biomass for production of fuel gases and organic liquids suitable for use as hydrocarbon fuels and as chemical feedstocks which process comprises:

(a) feeding chopped whole plant biomass feed of a suitable particle size by means of feed inlet ports to a furnace containing an oxidation zone, a preheat zone and a thermal conversion zone wherein said furnace is an upflow furnace and means are provided for exclusion of oxygen-containing gases from said feed inlet ports,

(b) injecting hydrogen at a pressure within the range of from 2 to 100 atmospheres into a burner grid of said oxidation zone and said preheat zone,

(c) injecting a limited amount of an oxygen-containing gas into said burner grid of said oxidation zone at a pressure of from about 1 to 100 atmospheres, wherein the ratio of oxygen to hydrogen is within the range of from about 1:2 to 1:100, moles of oxygen to moles of hydrogen, so that a hydrogen-oxygen reaction takes place,

(d) injecting said biomass feed into said preheat zone to heat said biomass feed to a temperature suitable for thermal



conversion, excess hydrogen being present at sufficient pressure to provide an upflow draft, thereby transporting said biomass feed from said preheat zone wherein the preheat zone temperature is in the range of from 100° C. to 1500° C. to said thermal conversion zone wherein a reducing atmosphere is present at a thermal conversion zone temperature of from 200° C. to about 1000° C. and a pressure of from 2 to 100 atmospheres,

(e) exposing said transported biomass feed in said thermal conversion zone to said thermal conversion zone temperature for a period of 0.1 second to one minute so that the biomass is hydropyrolyzed,

(f) removing biomass products and unconverted mass from said thermal conversion zone to a pressure-reducing quench vessel wherein pressure is reduced and temperature of said biomass products and the unconverted biomass feed is reduced to a temperature less than 400° C.,

(g) removing solids from said biomass products,

(h) recovering liquid condensibles and generated product gases from the biomass products.

4,364,746

ABRASIVE MATERIAL

Diethelm Bitzer, Hechingen-Stetten, Fed. Rep. of Germany; Jost Kramis, Islikon, and Jakob Ackermann, Wigoltingen, both of Switzerland, assignors to SIA, Schweizer Schmirgel- u. Schlief-Industrie AG, Frauenfeld, Switzerland

Continuation-in-part of Ser. No. 24,199, Mar. 27, 1979, abandoned. This application October 15, 1980, Ser. No. 197,193

Claims priority, application Fed. Rep. of Germany, March 28, 1978, 2813258

Int. Cl.³ C09K *3/14*

U.S. Cl. 51—298 **17 Claims**

1. In an abrasive carrier containing abrasive grains, at least a substantial portion of which comprises individual agglomerate abrasive grains each comprising a plurality of single abrasive grains bound together by a first binder, said grains being bound to a carrier or formed into an abrasive element by means of a second binder, the improvement by which a uniform cutting depth, a uniform rate of wear and a long lifetime of practical use are achieved, wherein said agglomerate abrasive grains comprise a plurality of substantially different groups of agglomerate abrasive grains, each of which groups exhibit substantially different structural strength qualities, and therefore different abrasive power and ability to sustain abrading forces, from the other group or groups, the grains of all said groups being mixed together prior to application to said carrier or formation into said element.

4,364,747

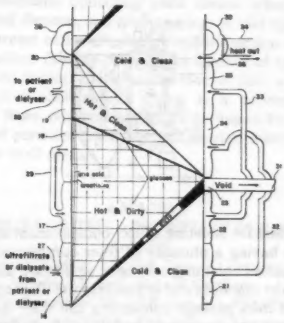
SYSTEM FOR REGENERATIVE THERMALLY REVERSED ADSORPTION

Perry L. Blackshear, Jr., Mahtomedi, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed August 29, 1977, Ser. No. 828,924

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—25 **8 Claims**



1. A regenerative thermally reversible system for concentrating an adsorbate by reversing the relative adsorptivity of the adsorbate versus heat, said system comprising:

(A) providing an initially relatively cool adsorbent bed of a material capable of developing a peak of concentration of an adsorbate immediately ahead of a thermal front, said bed being composed of a highly adsorptive material in proximity to a non-adsorptive material having an effectively high volumetric heat capacity,

(B) passing a relatively warmer adsorbate-containing fluid through said bed to create a thermal front therein,

(C) first separating the resulting pulse of fluid freed from its contained adsorbate,

(D) then separating the resulting pulse of concentrated adsorbate, both at the downstream end of the bed.

4,364,748

PROCESS FOR RECOVERING MALEIC ANHYDRIDE BY CONDENSATION

Kiran R. Bakshi, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 809,734, Jun. 24, 1977, abandoned. This application 1979, Ser. No. 11,972

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—27 **5 Claims**

1. A process for recovering maleic anhydride from gaseous compositions containing maleic anhydride and water, comprising cooling said composition to a temperature in the range of from about 25° C. to about 40° C. at a pressure less than about 50 millimeters of mercury thereby to obtain solid maleic anhydride having less than 300 ppm of maleic acid and fumaric acid impurities.

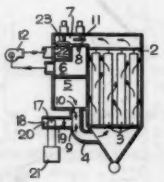
4. In a process for stripping low-boiling impurities from crude maleic anhydride produced by the vapor phase oxidation of a hydrocarbon feedstock; the improvement which comprises, passing the lights stripper overhead vapor containing, by volume, about 1 to 30 percent maleic anhydride and about 10 to 70 percent water, through a condenser system maintained at a temperature in the range of from about 25° C. to 40° C. at less than about 50 millimeters of mercury pressure thereby to obtain solid maleic anhydride having less than 300 ppm of maleic acid and fumaric acid impurities.

4,364,749

METHOD AND APPARATUS FOR SEALING THE INLET OF A FILTER COMPARTMENT TO ISOLATE THE COMPARTMENT WITHIN A BAGHOUSE INSTALLATION

S. Michael Dunseith, Louisville, Ky., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed October 9, 1981, Ser. No. 310,133
Int. Cl.³ B01D *46/04, 46/44*
U.S. Cl. 55—73 **10 Claims**



1. A method for isolating a filter compartment in a gas cleaning system having a plurality of filter compartments wherein hot dirty gases containing corrosive agents are directed into a common inlet manifold and drawn into the filter compartments through an inlet passage connecting the inlet manifold with each of the compartments including first damper means adapted to regulate the flow of dirty gasses through the inlet passage and second damper means connected to said inlet passage, said second damper means being in flow communication with said first damper means and a source of pressurized air wherein the dirty gases flow through filter bags supported within the compartments and exit each of the compartments through third damper means regulating flow of gas from connecting each compartment to a common outlet manifold, comprising:

closing the third damper means of the compartment to be isolated to prevent the flow of gases between said compartment and the outlet manifold;

closing the first damper means in the inlet passage of said compartment to prevent the flow of gases between said compartment and the inlet passage, said first damper means having a pair of spaced closure members movable between an open position allowing the flow of gases through the inlet passage and a closed position whereat the closure members are positioned and arranged with respect to the interior surface of the inlet passage to form a chamber within the passage; and

opening the second damper means to said source of pressurized air so as to supply pressurized air to said chamber at a pressure above the pressure of the dirty gases in the inlet passage to form a pressurized zone within the inlet passage preventing seepage of dirty gases into said compartment.

9. In a gas treating system for cleaning a stream of hot dirty gases containing corrosive agents at subatmospheric pressures including a plurality of filter compartments and common inlet and outlet manifolds, wherein each of the filter compartments includes an inlet duct opening into the inlet manifold and an outlet passage opening into the outlet manifold to accommodate drawing the gas stream through the compartment into the outlet manifold from the inlet manifold, and a plurality of filter bags secured within the compartments to filter the gases as they are drawn through the compartments, the improvement comprising:

outlet damper means connected with each compartment and being selectively positionable to close off its respective outlet passage to prevent the flow of gases between the compartment and the outlet manifold;

inlet damper means connected with each compartment including a pair of spaced closure members selectively positionable across its respective inlet duct to close off said duct to form a chamber within it between the closure members; and

additional damper means connected with each of the inlet ducts and in flow communication with said chamber for selectively venting the chamber formed in each of the ducts to the atmosphere upon opening said additional damper means; whereby

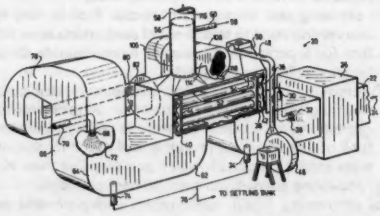
one of the compartments can be isolated during operation of the gas treating system by closing the inlet and outlet damper means of said compartment and then opening the additional damper means associated with said compartment, thereby allowing a stream of ambient air to flow into the chamber within the inlet duct of said compartment to form a pressurized zone within said duct preventing the seepage of dirty gases into said compartment.

4,364,750

PROCESS AND APPARATUS FOR PURIFYING WASTE GASES

Attila P. Koncz, Mississauga, Canada, assignor to Canadian Fine Color Company, Limited, Toronto, Canada

Filed 1981, Ser. No. 232,567
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—89 **28 Claims**

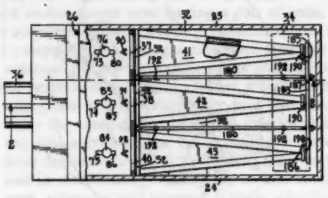


1. A process for purifying a waste gas stream containing minute pollutant liquid and solid particles as small as 1 micron or less, said process comprising treating said gas stream with a fine spray of scrubbing liquid by introducing into said gas stream said spray of a droplet size in the range of 1 micron or less, generating in said gas stream by agitation a turbulent region without appreciably increasing the pressure of said gas stream, said turbulent region having a Reynolds number measure of turbulence in the range of 1×10^6 to 1×10^8, mixing the introduced scrubbing liquid and pollutant particles in said turbulent region to enhance thereby the conglomeration of pollutant particles with scrubbing droplets to form larger particles and passing the mixed gas stream out of said turbulent region and removing the enlarged conglomerated contiminate particles from the gas stream to purify it.

4,364,751
SELF-CLEANING PULSED AIR CLEANER

George A. Copley, Farmington, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Division of Ser. No. 195,873, Oct. 10, 1980, Pat. No. 4,331,459.
This application 1982, Ser. No. 338,308
The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—96 2 Claims



1. The method of removing particles of solid matter from air which comprises:

(a) supplying a stream of uncleaned air to one end of a filter having adjacent sections defining chambers with a motion having a generally horizontal component parallel to the surface of the filter, so that the particles are initially collected on a surface of said filter and the air passes through the filter;

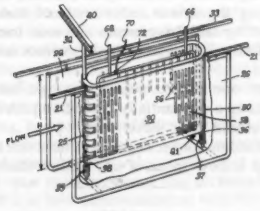
(b) repeatedly and sequentially supplying a reverse air pulsed to each of the chambers in a sequence from the uppermost section to the lowermost section dislodging the particles briefly from the surface of each filter section to enable them to migrate therealong toward the adjacent section and downstream toward a scavenge outlet located toward the remaining end of the filter; and

(c) withdrawing at said scavenge outlet said air carrying the migrated particles.

4,364,752
ELECTROSTATIC PRECIPITATOR APPARATUS HAVING AN IMPROVED ION GENERATING MEANS

Richard A. Fitch, 2340 Calle de Oro, La Jolla, Calif. 92037, and Joseph T. Roe, 5853 Valley Forge Rd., Houston, Tex. 77057

Filed March 13, 1981, Ser. No. 243,487
Int. Cl.³ B03C *3/00*
U.S. Cl. 55—138 32 Claims



1. A system for removing particles from a gaseous medium carrying the same, comprising:

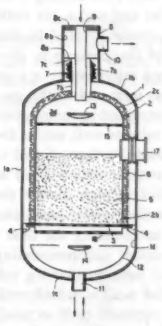
a flow channel through the system through which the gaseous medium passes in a downstream direction;

a first precipitating stage within said channel, a second precipitating stage within said channel, said second stage being located only downstream of said first stage and comprising at least one conductive shell means, each of said shell means comprising a pair of generally flat side walls, an upstream end wall interconnecting said side walls, said upstream end wall having a plurality of openings therein for admitting a flow of gaseous medium into the interior of said shell means, said shell means having a downstream end wall interconnecting said side walls and having openings therein for providing an outlet for said flow of gaseous medium, said conductive shell means having a corona discharge means located therewithin, adjacent collecting plate means associated with and spaced from said conductive shell means, the space between said side walls of said conductive shell means and said associated collecting plate means defining a pathway within said channel through which a portion of the medium passes, said conductive shell means being spaced and charged to a sufficient potential to maintain a strong generally uniform electric field between each of said conductive shell means and said associated collecting plate means, each of the side walls of said shell means having a plurality of openings therein through which ions generated by said corona discharge means can pass and enter said pathway to charge the particles of the medium located within the pathway, said openings being sufficiently large to pass enough ions therethrough to charge the particles within the pathway while not being so large so as to significantly disrupt the generally uniform electric field, said electric field driving said charged particles toward said associated collecting plate means where they are collected thereon, and said openings in said upstream and downstream end walls permitting the portion of the gaseous medium flowing through the interior of said conductive shell means, the inside surface of side walls of said conductive shell means acting as a collecting means spaced from said corona discharge means for collecting charged particles generated and located within said conductive shell means.

4,364,753
APPARATUS FOR THE ADSORPTIVE CLEANING OF GASES

Norbert Wagner, Schlederloh, Fed. Rep. of Germany, assignor to Linde AG, Wiesbaden, Fed. Rep. of Germany

Filed October 16, 1978, Ser. No. 951,876
Claims priority, application Fed. Rep. of Germany, October 18, 1977, 27466735
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—179 4 Claims



1. An adsorber for cleaning of gases comprising:

a pressure retentive thick-wall outer vessel provided with a duct at a bottom portion of said outer vessel;

a rigid grate spanning the interior of said outer vessel and rigidly secured thereto;

a loose gas-permeable body of an adsorbent resting on said grate;

a closed-top downwardly open inner vessel of lesser wall thickness than said outer vessel and disposed in said outer vessel and having a unitary therewith a lower edge resting

freely upon said grate without attachment thereto, said inner vessel being bottomless and fully open downwardly at said edge while confining said gas-permeable body of said adsorbent resting on said grate, a free space completely surrounding said inner vessel within said outer vessel to permit lateral movement of said inner vessel relative to said grate and said outer vessel; and

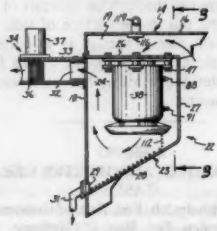
yieldable means including a further duct connecting said upper portion of said inner vessel to an upper portion of said outer vessel for permitting gas flow out of and into said inner vessel.

4,364,754

APPARATUS FOR SEPARATING FOREIGN MATTER FROM A GAS WITH A HEAT EXCHANGER

Wolodymyr Diachuk, Golden Valley, Minn., assignor to Century 21 Pollution Control, Inc., Minneapolis, Minn.

Filed April 13, 1981, Ser. No. 253,311
Int. Cl.³ B01D *51/00*
U.S. Cl. 55—269 **25 Claims**



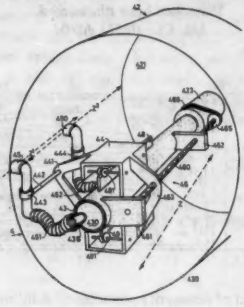
1. An apparatus for separating foreign matter from a hot gas and transferring heat from the gas to a fluid comprising: first means having a continuous uninterrupted fluid impervious heat conducting tubular wall surrounding a tubular passage, said wall having a gas inlet end and a gas outlet end aligned with the passage; second means located in the passage along the longitudinal length of the passage to direct gas and foreign matter flowing through said passage in a generally helical path extended from the gas inlet end to the gas outlet end thereof, said foreign matter entrained in the gas being collected on the inside surface of said tubular wall, said collected foreign matter moving along said inside surface of said tubular wall toward the gas outlet end; annular means fixed with respect to said tubular wall to collect foreign matter that moves from the outlet end and permit clean gas to pass centrally thereof; cylindrical jacket means surrounding the heat conducting tubular wall providing a chamber accommodating a fluid located in engagement with said heat conducting tubular wall whereby heat from said tubular wall is transferred to said fluid, said jacket means having opposite ends secured to the tubular wall adjacent the gas inlet and outlet ends thereof, said jacket means having a general spiral shape along the length thereof providing said chamber with a spiral passage for carrying fluid and directing the flow of fluid around and along the length of the tubular wall whereby the tubular wall is cooled and the temperature of the gas in the passage adjacent the inside surface of the tubular wall is lowered to enhance condensation of gases into liquids which collect on said inside surface of the tubular wall, means for supplying fluid to one end of said chamber, and means for carrying fluid from the other end of said chamber to a desired location.

4,364,755

FILTER ASSEMBLY

Hans Ferri, Müllerwis 27, 8606 Greifensee, Switzerland

Filed December 17, 1981, Ser. No. 331,887
Int. Cl.³ B01D *46/38*
U.S. Cl. 55—290 **9 Claims**



1. A filter assembly for the removal of solid materials from a gas stream, especially from an air stream during textile processing comprising:

a separator means;

means for delivering to the interior of said separator means a gas stream containing the solid materials;

said separator means containing a filter drum provided with a stationary, substantially cylindrical and gas-pervious filter jacket;

an approximately axially arranged rotating hollow shaft containing a hollow space and disposed within said filter drum;

drive means operatively connected to said hollow shaft for driving said hollow shaft;

at least one suction nozzle rigidly connected for rotation to said hollow shaft;

a suction device for sucking-off through said suction nozzle and the hollow space of said hollow shaft the solid materials deposited at an inner surface of said filter jacket;

at least one slide means rigidly connected for rotation in radial direction to said hollow shaft but displaceable in the axial direction of said hollow shaft;

said at least one suction nozzle being operatively connected with said slide means;

means rigidly connected for rotation to said hollow shaft for converting the driven movements of said hollow shaft generated by said drive means into axial oscillating movements of said slide means which revolves with said hollow shaft;

said at least one suction nozzle being guided by said slide means along a substantially wave-like path over the inner surface of said filter jacket; and

a flexible conduit connecting said at least one suction nozzle with said hollow space of said hollow shaft.

4,364,756

REFRIGERANT SUCTION LINE FILTER/FILTER-DRIER AND METHOD FOR THE CONSTRUCTION THEREOF

John P. Clarke, and Ernest W. Schumacher, both of DeSoto, Tex., assignors to Virginia Chemicals Inc., Portsmouth, Va.

Filed July 7, 1981, Ser. No. 281,213
Int. Cl.³ B01D *50/00, 25/02, 27/02;* F25B *47/00*
U.S. Cl. 55—316 **17 Claims**

1. A filter/filter-drier for use in air conditioning and refrigerating systems, comprising:

A. a shell assembly, comprising a cylindrical shell having an interior diameter, a pair of closure members which are sealably attached to opposite ends of said shell, an inlet

connector which is sealably attached to one said closure member, and an outlet connector which is sealably attached to the other said closure member;

B. a desiccant, formed in the shape of a cylindrical plug, which is disposed within said shell to provide an upstream space and a downstream space between said desiccant and said connectors;

C. a dual filter system, comprising:

(1) a primary filter assembly which is coaxially disposed within said upstream space, comprising:

(a) a center spacer post having a pair of ends,

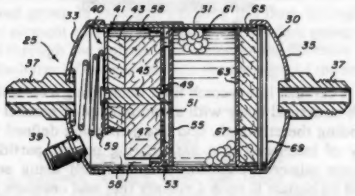
(b) an inlet deflector which is fastened to one said end,

(c) a stepped filter having a maximum diameter which is substantially less than said interior shell diameter, and

(d) a perforated filter pad support which is fastened to said other end of said spacer post and has substantially the same diameter as said interior shell diameter, said stepped filter being disposed between said inlet deflector and said perforated filter pad support and in surrounding relationship to said center spacer post, whereby said stepped filter is selectively compressed between said deflector and said filter pad support;

(2) a secondary filter assembly which is disposed in said downstream space and has substantially the same diameter as said interior shell diameter;

D. an annular inlet gasket which is disposed adjacent to said filter pad support and is in peripheral contact with said cylindrical shell, for sealably separating said upstream space from said downstream space; and



E. a spring which is coaxially disposed within said shell and in pressurized contact with one said closure member and which thereby compresses said dual filter system, said gasket, and said desiccant between said closure members.

14. A method of glass constructing a filter/filter-drier to provide increased contaminant holding capacity therewithin and to enable pressure drop across said filter/filter-drier to increase gradually and provide a warning of impending need for replacement thereof, wherein said filter/filter-drier comprises a cylindrical shell, a pair of sealably attached closure members at the ends thereof, coaxially disposed inlet and outlet openings in said closure members, and a primary filter assembly, said method comprising:

A. providing, as a part of said filter assembly, a stepped filter having a selected peripheral area, a selected facial area, and a selected internal volume which is accessible to a selected open upstream space that surrounds said stepped filter and is in flow communication with the inlet opening; and

B. providing, as another part of said filter assembly, a rigid deflector member which is disposed in coaxial alignment with said inlet opening, substantially downstream thereof, and transversely thereto for protecting said stepped filter; and

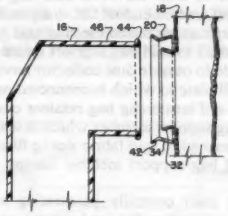
C. providing a sealing means for isolating said open upstream space from said outlet opening except through a plurality of openings which are in flow communication with said stepped filter, whereby an incoming refrigerant mixture enters said inlet openings, impinges upon said liquid deflector member, swirls through said upstream space, enters both said facial and said peripheral areas of said stepped filter, moves along strata within said stepped filter, and deposits its solid particles at many locations within said internal volume before passing through said plurality of openings to said outlet opening.

4,364,757

VACUUM CLEANER FILTER BAG COLLAR ARRANGEMENT

John A. Leonatti, Uniontown, Ohio, assignor to The Hoover Company, North Canton, Ohio

Filed August 24, 1981, Ser. No. 295,830
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—357 **11 Claims**



1. A vacuum cleaner filter bag having a filter body of air-pervious material with an opening therein for admitting dirt laden air into an interior portion thereof and a plastic collar specially adapted for use with a flanged air duct, said filter bag further comprising:

(a) said plastic collar having a generally circular shaped aperture therethrough communicating with the opening in the filter body;

(b) said plastic collar further including a base secured to the filter body and extending radially outwardly from the filter body opening with an outer periphery thereof terminating in an annular peripheral skirt; and

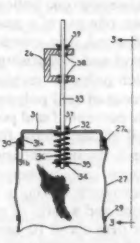
(c) said annular peripheral skirt extending both axially in a direction away from the filter body and inwardly toward the axis of the filter body opening for cooperation with a flanged air duct for retention and sealing purposes.

4,364,758

SELF TENSIONING CAP FOR BAG FILTERS

Jack T. Clements, and Robert E. Mace, both of Raytown, Mo., assignors to Standard Havens, Inc., Kansas City, Mo.

Filed August 10, 1981, Ser. No. 291,624
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—365 **5 Claims**



1. In an inside to outside dust collector having a bag support frame and a cell plate to which is connected one end of a fabric sleeve filter, a self tensioning bag retainer comprising:

a circular bag support member which is sealingly connected to the other end of said fabric sleeve filter to support said filter, said bag support member having first and second sides;

an elongate shaft centrally penetrating said bag support member and having first and second ends extending respectively from said first and second sides of said bag support member, said elongate shaft having a laterial opening intermediate the ends thereof;

compressible tensioning means disposed between said first end of the elongate shaft and said first side of the bag support member to urge said bag support member toward said second end of the elongate shaft;

removable compression holding means comprising a pin member removably disposed through said laterial opening of said elongate shaft to engage said second side of the bag support member to compress said compressible tensioning means and to limit travel of said bag support member toward said second end of the elongate shaft; and

adjustable support means connecting said second end of the elongate shaft to said bag support frame.

2. In an inside to outside dust collector having a bag support frame and a cell plate to which is connected one end of a fabric sleeve filter, a self tensioning bag retainer comprising:

a circular bag support member which is sealingly connected to the other end of said fabric sleeve filter to support said filter, said bag support member having first and second sides;

an elongate shaft centrally penetrating said bag support member and having first and second ends extending respectively from said first and second sides of said bag support member, said shaft having a plurality of spaced holes bored laterally therethrough adjacent said second end thereof;

compressible tensioning means disposed between said first end of the elongate shaft and said first side of the bag support member to urge said bag support member toward said second end of the elongate shaft; and

adjustable support means connecting said second end of the elongate shaft to said bag support frame, said support means comprising a pin removably disposed through one of said spaced holes of said elongate shaft to engage said bag support frame for support thereon.

4,364,759

METHODS FOR PREPARING ANISOTROPIC HOLLOW FIBER MEMBRANES COMPRISING POLYMER OF ACRYLONITRILE AND STYRENE AND HOLLOW FIBER MEMBRANES PRODUCED THEREFROM

Albert A. Brooks, St. Louis; Jay M. S. Henis, and Mary K. Tripodi, both of Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 24,754, Mar. 28, 1979, abandoned. This application 1980, Ser. No. 122,956

Int. Cl.[3] **B01D** *53/22;* **B29D** *27/04;* **B32B** *3/20;* **D01F** *6/18*

U.S. Cl. 55—487 **17 Claims**

1. A dry, integral anisotropic hollow fiber membrane for the separation of at least one gas of a gaseous mixture comprising a homogeneously-formed, thin, exterior, separating layer on an open, cellular support and comprising polymer of acrylonitrile and styrene in which polymer, acrylonitrile comprises at least about 20 mole percent of said polymer and styrene comprises up to about 60 mole percent of said polymer, wherein a volume majority of the wall of said hollow fiber membrane consists of cells having a mean major dimension of less than about 2 microns and said open, cellular support comprising a substantial absence of macrovoids having a major dimension greater than about 3 microns and a ratio of maximum length to maximum width greater than about 10, said hollow fiber membrane exhibiting a ratio of permeability of at least one of hydrogen, helium and ammonia to the permeability constant of the material of the hollow fiber membrane for said gas of at least about 5×10^4 reciprocal centimeters; a permeability ratio of (i) the permeability of a lower molecular weight gas divided by the permeability of a higher molecular weight gas to (ii) the square root of the molecular weight of said lower molecular weight gas divided by the square root of the molecular weight of said higher molecular weight gas of at least about 6, wherein said lower molecular weight gas is one of hydrogen and helium and said high molecular weight gas is one of nitrogen, carbon monoxide and carbon dioxide and has a permeability constant in the polymer at least about 10 times less than the permeability constant of said lower molecular weight gas in said material; and a collapse pressure of at least about $4(T_S)(t/D)^3$ wherein T_S is the tensile strength of the polymer, t is the wall thickness and D is the outside diameter of the hollow fiber membrane, said membrane having a permeability for water of less than about 0.05×10^{-6}.

4,364,760

CERAMIC HONEYCOMB FILTER

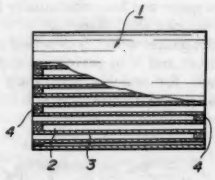
Noboru Higuchi; Teruo Yano, both of Nagoya, and Masahiro Ohnishi, Kuwana, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed October 15, 1980, Ser. No. 197,017

Claims priority, application Japan, August 28, 1980, 55-117736

Int. Cl.[3] **B01D** *39/20*

U.S. Cl. 55—523 **5 Claims**



1. A ceramic honeycomb filter comprising a ceramic honeycomb structural body with a multiplicity of parallel channels extending therethrough, said channels being defined by a plurality of interlaced thin gas filtering porous partition walls between adjacent channels, said channels being selectively sealed by sealant in such a manner that said channels include a first group comprising inlet passages open at one end of the channels and closed at the other end, a second group comprising outlet passages closed at said one end of the channels and open at the other, wherein said inlet and outlet passages are arranged side by side such that each said inlet and outlet passages are defined by said porous partition walls so as to form a filtering surface for gas flow between said adjacent channels, said ceramic honeycomb structural body having a coefficient of thermal expansion α_A of 0 to 8.0×10^{-6}/°C. for 40° C. to 800° C., said sealant having a coefficient of thermal expansion α_B for 40° C. to 800° C. in a range satisfying a relationship of $|\alpha_A-\alpha_B|\leqq3.5\times10^{-6}$/°C.

4,364,761

CERAMIC FILTERS FOR DIESEL EXHAUST PARTICULATES AND METHODS FOR MAKING

Morris Berg, Grand Blanc; Carl F. Schaefer, Flint, both of Mich., and William J. Johnston, Birkdale, England, assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 99,933, Dec. 3, 1979, abandoned. This application June 15, 1981, Ser. No. 273,660

Int. Cl.[3] **B01D** *39/20*

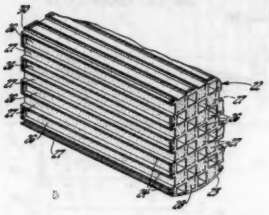
U.S. Cl. 55—523 **9 Claims**

1. A combination with a diesel engine exhaust system of a compact high efficiency incineration cleanable exhaust particulate filter element comprising a ceramic monolith structure having a plurality of thin interlaced porous internal walls defining a plurality of small inlet passages extending adjacent to a plurality of small outlet passages, said inlet and outlet passages being separated by the porous walls of the monolith structure to permit gas flow through the pores between the inlet and outlet passages, said monolith structure having an

average overall porosity of at least 9 percent, a mean pore size of between 2 and 15 microns with individual pore sizes substantially all between 0.5 and 70 microns, said internal walls having not less than 9 square inches of wall filtering area for each cubic inch of the monolith structure.

9. A method of making a compact through flow exhaust particulate filter element for internal combustion engines, said method comprising

forming a ceramic monolith of thin interlaced porous wall elements defining internally a plurality of parallel through-extending passages, comprising first and second



groups, in which each nonengaged portion of every internal wall element defines part of a passage of each group and permits gas flow communication between them through the pores of said wall elements, and

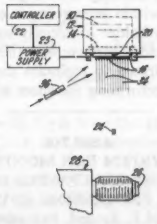
closing with a high temperature resistant material the outlet ends of the first group of passages and the inlet ends of the second group of passages whereby gas flow through the filter element entering the passages of the first group must pass through the porous wall elements for filtration prior to discharge of the gas through the passages of the second group.

4,364,762

MINERAL FIBER FORMING

Timothy A. Sullivan, Newark, Ohio, and James Whitfield, Jr., Anderson, S.C., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed October 5, 1981, Ser. No. 308,227
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—2 **1 Claim**



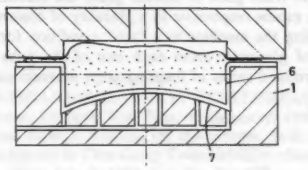
1. The method for producing fibers from molten mineral material of the type in which said fibers are pulled downwardly from a heated bushing having associated therewith a temperature sensing means and a temperature control means for supplying power responsive to said temperature sensing means, where the downward travel of said fibers during production induces a flow of air traveling toward said fibers and substantially in a horizontal plane located immediately beneath said bushing, and where the induced air flow functions as a heat sink to cool said bushing during production, wherein the improvement comprises supplying a secondary flow of cooling air to said bushing during cessation of said induced air flow caused by the interruption of production, said secondary flow of cooling air being of a flow rate and temperature sufficient to replace the heat sink function provided by the induced air flow, thereby causing the power supplied to said bushing to remain substantially constant during said cessation of induced air.

4,364,763

METHOD OF MAKING MIRROR BLANKS INCLUDING BLANKS MADE ACCORDING TO SAID METHOD

Gustav B. Rennerfelt, Nilstropsvagen 82, S-181 47 Lindingo, Sweden

PCT No. PCT/SE80/00151, § 371 Date 1981, § 102(e) Date 1981, PCT Pub. No. WO80/02684, PCT Pub. Date December 11, 1980
PCT Filed May 23, 1980, Ser. No. 228,066
Claims priority, application Sweden, May 25, 1979, 7904584
Int. Cl.³ C03C *17/02;* C03B *19/06;* G02B *5/08*
U.S. Cl. 65—22 **12 Claims**



1. A method of making mirror blanks, characterized by moulding at least one slab, (3; 16, 17) of a thermoplastic, normally solid material under heat treatment against a matrix (1; 14, 15) having a form substantially matching that of the final mirror, to form a shell, introducing into the shell a material selected from the group consisting of

(1) glass bubbles of a thermoplastic, normally solid material, and

(2) a composition of a powder of glass together with an expansion agent, and

(3) mixtures thereof,

and bringing the glass bubbles and the powder particles of the composition resp., the latter after expansion, to adhere, on one hand to each other, and on the other to the shell (6) to form a porous supporting structure.

4,364,764

AUTOMATIC STOP ROUTINE FOR A GLASSWARE FORMING MACHINE

Daniel S. Farkas, and Eric R. Zabor, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 182,196, Aug. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 970,691, Dec. 18, 1978, abandoned, which is a continuation of Ser. No. 866,085, Dec. 30, 1977, abandoned. This application November 25, 1981, Ser. No. 324,754
Int. Cl.³ C03B *9/40*
U.S. Cl. 65—29 **14 Claims**

1. In a machine for forming articles of glassware from gobs of molten glass, the machine including forming means responsive to a plurality of control signals for controlling the machine in a "run" condition for forming an article of glassware from each one of the gobs of molten glass in a cyclic predetermined series of forming steps wherein each machine cycle has at least one point at which a stop routine is initiated in response to a machine stop signal, a control means comprising:

means for generating a machine start signal and a machine stop signal;

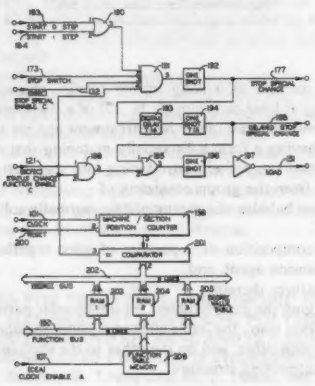
means responsive to the generation of said machine start signal for generating a first group of control signals for controlling the forming means in a start routine to place the machine in a condition for performing the cyclic

predetermined series of forming steps of the "run" condition;

means responsive to the generation of said machine stop signal, when the machine is in the "run" condition, for generating a second group of the control signals, when the series of forming steps is at the point in the machine cycle at which a stop routine is initiated, for controlling the forming means in a first stop routine to place the machine in a "safe" condition; and

means responsive to the generation of said machine stop signal, when the machine is being controlled in said start routine, for exiting said start routine at a predetermined exit point in the machine cycle, different from the one point in the machine cycle at which a stop routine is initiated, and for entering a second stop routine for generating a third group of the control signals to place the machine in the "safe" condition.

4. A method for controlling a machine for forming articles of glassware from gobs of molten glass, the machine including forming means responsive to a plurality of control signals for controlling the machine in a "run" condition for forming an article of glassware from each one of the gobs in a cyclic predetermined series of forming steps wherein each machine



cycle has at least one point at which a stop routine is initiated in response to a machine stop signal, the method comprising the steps of:

generating a machine start signal;

generating a first group of control signals in response to said machine start signal for controlling the forming means in a start routine to place the machine in a condition for performing the cyclic predetermined series of forming steps of the "run" condition;

generating a machine stop signal;

generating a second group of the control signals for controlling the forming means in a first stop routine to place the machine in a "safe" condition in response to the generation of said machine stop signal when the machine is in the "run" condition and the series of forming steps is at the one point in the machine cycle at which a stop routine is initiated; and

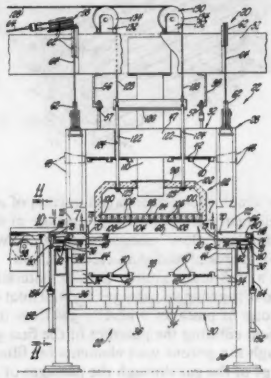
generating a third group of the control signals at a predetermined exit point in said start routine, different from the one point in the machine cycle at which a stop routine is initiated, for controlling the forming means in a second stop routine to place the machine in a "safe" condition in response to the generation of said machine stop signal during said start routine.

4,364,765

APPARATUS AND METHOD FOR HANDLING HEATED GLASS SHEETS

Harold A. McMaster, 420 Water St., Woodville, Ohio 43469; Norman C. Nitschke, 9102 Buck Rd., Perrysburg, Ohio 43551, and John S. Nitschke, 324 E. Second, Perrysburg, Ohio 43551

Division of Ser. No. 118,822, Feb. 5, 1980, Pat. No. 4,282,026, and a continuation of Ser. No. 872,201, Jan. 25, 1978, abandoned. This application May 14, 1981, Ser. No. 263,670
The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.
Int. Cl.[3] C03B *35/14*
U.S. Cl. 65—106 8 Claims



1. Apparatus for handling heated glass sheets comprising: a vacuum holder having a downwardly facing surface; said holder surface having at least one opening therethrough; means for drawing a vacuum within said opening of the holder to support a heated glass sheet against the holder surface; and said vacuum drawing means including a control therefor so as to initially draw a greater vacuum to secure a heated glass sheet to the holder and so as to subsequently draw a lesser vacuum to maintain the glass sheet supported without deforming the sheet at the opening.

5. A method for handling heated glass sheets comprising: drawing a vacuum within an opening in a downwardly facing surface of a vacuum holder to initially support a heated glass sheet against the holder surface; and thereafter reducing the extent of vacuum drawn to maintain the heated glass sheet supported without deforming the sheet at the opening.

4,364,766

CONTROL SYSTEM FOR MONITORING AND CONTROLLING THE PROCESSING OF GLASS SHEETS IN A GLASS PROCESSING ENVIRONMENT

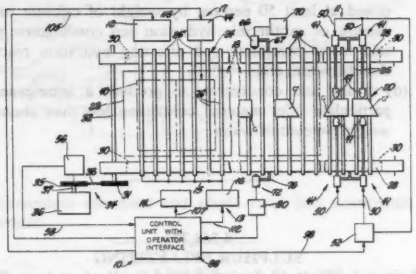
John S. Nitschke, 324 E. Second, Perrysburg, Ohio 43551

Continuation-in-part of Ser. No. 259,749, May 1, 1981, abandoned. This application March 30, 1982, Ser. No. 363,689
Int. Cl.[3] C03B *35/00;* G06K *1/04, 1/14*
U.S. Cl. 65—160 17 Claims

1. A control system for monitoring and controlling the processing of sheets of glass in a glass processing system wherein the glass sheets are conveyed by a horizontal roller conveyor and received from certain rolls of the roller conveyor by a bending apparatus of the glass processing system to perform bending thereof, the control system including sensor means located along the path of conveyance for sensing the glass sheets as the glass sheets are conveyed by the roller conveyor past the sensor means and providing glass sense signals upon sensing the glass sheets; and generating means coupled to the roller conveyor for generating a transport

signal corresponding to the distance that the glass sheets are conveyed along the path of conveyance; wherein the improvement comprises:

programmable signal processing means for processing said glass sense and transport signals corresponding to each



glass sheet to provide control signals to a roll operator of the glass processing system for operating a plurality of rolls adjacent the bending apparatus to control movement thereof and glass sheet conveyance thereon independent of the glass sheet conveyance on the other rolls of the conveyor.

4,364,767

N(CARBOXYMETHYL-N-(PHOSPHONOMETHYL)-5-(2-CHLORO-4-TRIFLUOROMETHYL PHENOXY)-2-NITROBENZAMIDE AND SALTS THEREOF

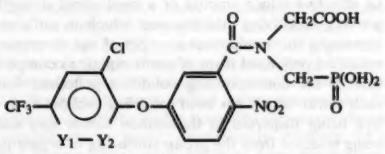
Stanley T. D. Gough, Whitehouse Station, N.J., assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed July 27, 1981, Ser. No. 286,995

Int. Cl.³ A01N *9/36*; C07F *9/38, 9/02, 9/06*

U.S. Cl. 71—86 **4 Claims**

1. A herbicidal compound of the formula



where Y_1 is N or C—H, Y_2 is N or C—H provided that Y_1 is not N when Y_2 is C—H and agronomically acceptable salts thereof.

3. A herbicidal composition comprising a compound according to claim 1 and an agronomically acceptable carrier.

4,364,768

3'-(SUBSTITUTED PHENYL)-SPIRO[ISOBENZOFURAN-1(3H),5'(4'H)-ISOXAZOL]-3-ONES AND THEIR USE AS PLANT GROWTH REGULANTS

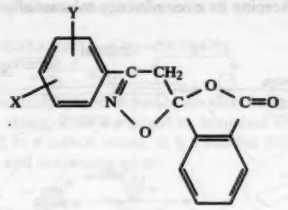
Robert K. Howe, Bridgeton, and Kou-Chang Liu, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 971,462, Dec. 20, 1978, Pat. No. 4,209,629. This application June 18, 1980, Ser. No. 160,692

Int. Cl.³ A01N *43/50*; C07D *261/4*

U.S. Cl. 71—88 **22 Claims**

1. A method of regulating the growth of desirable leguminous plants which comprises applying to the plant locus a plant growth regulating effective amount of a compound having the formula



wherein X and Y are independently selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, halo-lower-alkyl, phenoxy, phenyl and cyano.

4,364,769

1,3,4-THIADIAZOLYLOXYPHENYLUREAS

Georg Pissiotas, Lörrach, Fed. Rep. of Germany; Otto Rohr, Therwil, and Haukur Kristinsson, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

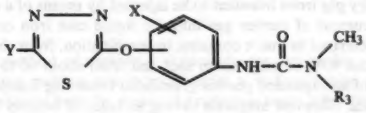
Filed July 7, 1980, Ser. No. 166,679

Claims priority, application Switzerland, July 13, 1979, 6554/79

Int. Cl.³ A01N *47/28, 47/30*; C07D *285/12*

U.S. Cl. 71—90 **22 Claims**

1. A 1,3,4-thiadiazolyloxyphenylurea of the formula



wherein

X is hydrogen, halogen or trifluoromethyl,

Y is hydrogen, C_1–C_6 alkyl optionally substituted by halogen or cyano, C_3–C_6 cycloalkyl, cyclopropylmethyl, phenyl optionally substituted by chlorine or C_1–C_4 alkyl, C_1–C_4 alkylthio, C_1–C_4 alkoxy, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, sulfamoyl or dimethylsulfamoyl, and

R_3 is methyl or methoxy.

22. A method of selectively controlling weeds in crops of cultivated plants, which comprises applying to said crops a herbicidally effective amount of a 1,3,4-thiadiazolyloxyphenylurea according to claim 1.

4,364,770

MANUFACTURE OF A COMPOSITE TUBULAR PRODUCT

Michel Douchy, Solesmes; Jean-Louis Tranchant, Valenciennes, and Michel Jehan, La Flamengrie, all of France, assignors to Vallourec, Paris, France

Filed 1981, Ser. No. 237,805

Claims priority, application France, 1980, 80 04194

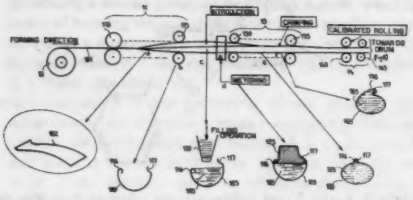
Int. Cl.³ C22B *9/00*

U.S. Cl. 75—53 **13 Claims**

1. Process for the manufacture of a composite tubular product comprising the steps of:

(a) filling a tubular envelope with a powder capable of aggregation; and

(b) reducing the cross-section of the filled tubular envelope while keeping its circumference substantially constant;



(c) whereby said powder is compacted in situ while being safely retained within said tubular product.

4,364,771

PRODUCT FOR THE DESULPHURIZATION OF CAST IRONS AND STEELS

Jean Cordier, Dunkerque; Michel Demange, Le Fayet, and Jean Idier, St. Beat, all of France, assignors to Societe Francaise d'Electrometallurgie SOFREM, Paris, France

PCT No. PCT/FR80/00073, § 371 Date 1981, § 102(e) Date December 17, 1980, PCT Pub. No. WO80/02565, PCT Pub. Date November 27, 1980

PCT Filed May 12, 1980, Ser. No. 224,535

Claims priority, application France, May 15, 1979, 79 13279

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—58 15 Claims

1. A product for the desulphurization of forge pigs and foundry pig irons and steels and for the nodularization of foundry pig irons intended to be injected by means of a nozzle in a current of carrier gas into the liquid cast iron or steel, characterized in that it contains, in combination, from about 10 to about 90% of magnesium shot and from about 90 to about 10% of an expanded porous granulated basic slag comprising, alumina, silica and magnesia having an index of basicity higher than 1.

4,364,772

RAIL WHEEL ALLOY

Larry A. Niemond; Michael W. Helwig, Jr., and Thomas J. Connare, all of Lewistown, Pa., assignors to Titanium Metals Corporation of America, Pittsburgh, Pa.

Filed May 28, 1981, Ser. No. 268,032

Int. Cl.³ C22C *38/18, 38/40*

U.S. Cl. 75—126 R 9 Claims

1. An alloy particularly adapted for the manufacture of rail wheels and having an improved combination of hardness, and wear resistance, plus resistance to thermal cracking, said alloy consisting essentially of, in weight percent, carbon 0.48 to 0.64, phosphorus 0.05 max., sulfur 0.05 max., silicon 0.40 max., manganese 0.60 to 1.10, chromium 0.30 to 0.60, nickel 0.50 max. and balance iron and incidental impurities.

4,364,773

WASTE METAL CONVERSION PROCESS AND PRODUCTS

Marcel Veronneau, 48 North St., Watertown, Conn. 06795, and Thomas Marino, Hydlar Ave., Prospect, Conn. 06712

Filed December 23, 1980, Ser. No. 220,002

Int. Cl.³ C08L *95/00*

U.S. Cl. 106—281 R 41 Claims

1. In a process for producing a finely divided filler material from an aqueous waste solution containing at least one metal capable of reaction to form insoluble hydroxide and sulfide compounds, the steps comprising:

(a) effecting reaction in said solution to produce an aqueous sludge comprised of an insoluble hydroxide and sulfide precipitate of said metal;

(b) removing water from said sludge to produce a concentrate containing less than about 60 weight percent of water;

(c) admixing with said concentrate about 10 to 40 percent, based upon the weight thereof, of a basic fixtative, comprised at least 50 percent by weight of calcium oxide, capable of exothermic hydration and combination with said metal precipitate and effecting hydration reaction therebetween; and

(d) drying said concentrate to produce a homogeneous, particulate filler material containing less than about 25 weight percent of water.

4,364,774

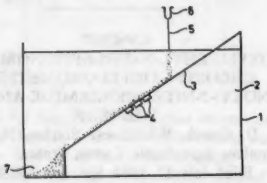
SULPHUR PELLETIZING

Herbert J. Elliott, 63 Poulton Estate, Bradford on Avon, Wiltshire, England

Division of Ser. No. 966,459, Dec. 4, 1978, Pat. No. 4,254,067, which is a continuation of Ser. No. 664,619, Mar. 8, 1976, abandoned. This application August 4, 1980, Ser. No. 175,225

Int. Cl.³ C01B *17/027;* C09K *3/00*

U.S. Cl. 106—287.13 8 Claims



1. Combination comprising

a mixture of molten sulfur containing dispersed therewithin an effective minor amount of a mechanical strength improving modifying additive and which is sufficient for increasing the mechanical strength of the corresponding solidified pelletized form of such sulphur as compared to that of the corresponding solidified pelletized form of such sulfur which has been solidified without such additive being dispersed in the molten sulfur, said additive being selected from the group consisting of organopolysiloxane, between about 4–10 ppm based on the sulfur content of kerosene, between about 4–10 ppm based on the sulfur content of other lower boiling range hydrocarbon than kerosene, and mixtures thereof.

4,364,775

AQUEOUS OXIDATIVE SCRUBBER SYSTEMS FOR REMOVAL OF MERCURY

John A. Starkovich, Redondo Beach, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

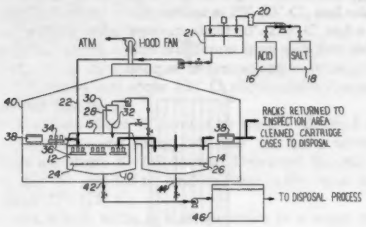
Filed June 19, 1981, Ser. No. 275,531

Int. Cl.³ C23G *1/02*

U.S. Cl. 134—3 10 Claims

1. A process for removing mercury from plated solid substrates comprising the steps of contacting said solid substrate with an aqueous solution of an oxidative salt and nitric acid in a ratio by weight of from about 1.4 to about 4 for a period sufficient to remove mercury from said substrate, and then

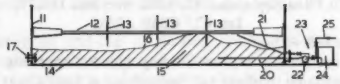
removing the solid substrate from the solution, said oxidative salt being selected from the group consisting of alkali metal and ammonium chromate and alkali metal and ammonium dichromate.



4,364,776
RECOVERY OF HEAVY HYDROCARBONS FROM OIL SLUDGE

Alistair D. McBride, Wishaw, Scotland, and Ian S. Ripley, Middlesbrough, England, assignors to Emultec Limited, Englescliffe, England

Filed 1981, Ser. No. 228,274
Claims priority, application United Kingdom, 1980, 8001862
Int. Cl.³ B08B *3/02, 9/08*
U.S. Cl. 134—10 **5 Claims**



1. A method of fluidising a non-pumpable hydrocarbonaceous sludge body deposited by an oil having a substantial heavy hydrocarbonaceous content when such oil is left standing in a bulk-storage container, said method comprising the steps of penetrating one or more substantially rigid tubular lances into the sludge body, physically and chemically breaking down the sludge body by pumping into the sludge body by way of the tubular lances dispersant chemical borne by a water jet, said dispersant chemical being present in the water jet in an amount sufficient to form emulsified hydrocarbonaceous fractions on the surface of the sludge body, the dispersant chemical being emulsifiable in water, continuously drawing off the emulsified hydrocarbonaceous fractions from the surface of the sludge body and recirculating these fractions under pressure by way of the tubular lances into the sludge body.

4,364,777
PREVENTION OF FOAM IN ALKALINE CLEANSING BATH BY THE USE OF MIXED FORMALS OF POLYGLYCOL ETHERS

Margarete Grünert, Kaarst; Karl Schmid, Mettmann, and Holger Tesmann, Dusseldorf-Unterbach, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaa), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed April 27, 1981, Ser. No. 257,855
Claims priority, application Fed. Rep. of Germany, May 12, 1980, 3018149
Int. Cl.³ B08B *3/08;* C11D *1/722*
U.S. Cl. 134—29 **3 Claims**

1. In the process of washing rigid solid articles with a strongly alkaline washing solution having a pH of more than 10 and containing a defoaming effective amount of a defoaming agent, rinsing said rigid solid articles and recovering cleaned rigid solid articles, the improvement consisting of using a defoaming effective amount of at least one mixed formal of an alkylpolyglycol ether having the formula

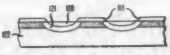
$$R_1—O—(CH_2CH_2O)_m—CH_2—(OCH_2CH_2)_n—O—R_2$$

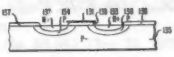
wherein R_1 is a straight or branched chain alkyl having from 12 to 18 carbon atoms, R_2 is a straight or branched chain alkyl having from 2 to 4 carbon atoms, m is a number from 7 to 15 and n is 1, as said defoaming agent.

4,364,778
FORMATION OF MULTILAYER DOPANT DISTRIBUTIONS IN A SEMICONDUCTOR

Harry J. Leamy, Summit, and Thomas E. Seidel, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 30, 1980, Ser. No. 154,855
Int. Cl.³ H01L *7/34, 21/265*
U.S. Cl. 148—1.5 **18 Claims**





1. A method of making a semiconductor device by steps comprising melting one or more times a surface region of a semiconductor body by means of a radiation beam, wherein the duration of each melting at a given location on said body is less than 10 milliseconds, and wherein said melting extends into a single crystal region of said semiconductor body, with said single crystal region having a given dopant type immediately beneath said melted region,

CHARACTERIZED IN THAT

the melted region comprises a first dopant having an equilibrium segregation coefficient of less than 0.1, and a second dopant having an equilibrium segregation coefficient of greater than 0.1, with at least said second dopand being deposited on, or introduced in, said surface region prior to said melting, and with said melting extending to a depth greater than the depth of such deposited or introduced dopant or dopants prior to said melting, whereby a junction is formed within said region upon resolidification of the melt.

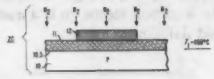
4,364,779
FABRICATION OF SEMICONDUCTOR DEVICES INCLUDING DOUBLE ANNEALING STEPS FOR RADIATION HARDENING

Avid Kamgar, Millington, and Ashok K. Sinha, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed August 4, 1980, Ser. No. 175,055
Int. Cl.³ H01L *21/477, 7/54*
U.S. Cl. 148—1.5 **20 Claims**

1. A process for manufacturing a silicon semiconductor device in which the semiconductor is heated to a first elevated temperature and exposed to an ambient containing hydrogen,

cooled in said ambient to a lower temperature, and then heated to a second elevated temperature,



CHRACTERIZED IN THAT the device is pervious to hydrogen during a time interval while being cooled to said lower temperature.

4,364,780

METHOD OF PROVIDING A METAL COMPONENT WITH A THERMALLY BLACK SURFACE

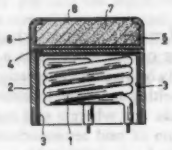
Jacob Blanken, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed April 13, 1981, Ser. No. 253,486

Claims priority, application Netherlands, May 9, 1980, 8002665

Int. Cl.³ C23C *17/00*; B32B *15/20, 15/18, 15/04*

U.S. Cl. 148—6 **12 Claims**



1. A method of providing a thermally black surface on a substrate comprising the steps of:

forming a layer of a metal compound on said substrate, said metal compound comprising aluminum and at least one of molybdenum, nickel, iron, tungsten and copper; and

oxidizing part of the aluminum from said metal compound.

4,364,781

METHOD OF TREATING ZIRCONIUM-BASED ALLOY TUBES

Gunnar Vesterlund, Västeras, Sweden, assignor to AB Asea-Atom, Västeras, Sweden

Filed 1981, Ser. No. 235,627

Claims priority, application Sweden, 1980, 8001401

Int. Cl.³ C23F *7/02*

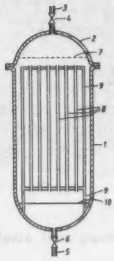
U.S. Cl. 148—6.3 **14 Claims**

1. A method of producing cladding tubes, said method comprising the steps of

(a) providing a tube made of a zirconium-based alloy,

(b) treating the internal surface of the tube of step (a) to form an oxide layer thereon having a thickness of between about 0.01 and about 0.1 micron,

(c) contacting the oxide layer on the internal surface of the tube of step (b) with an activating solution, said activating solution consisting of an aqueous solution containing from about 1 to about 3 g/l of hydrogen fluoride, from about 2 to about 8 g/l of ammonium fluoride and from about 0.1 to about 0.5 g/l of sulfuric acid, the amount of ammonium fluoride, calculated in moles, exceeding the amount of hydrogen fluoride, calculated in moles, by at least 5 percent,



(d) applying a copper layer to the treated oxide layer on the internal surface of the tube of step (c), and

(e) treating the tube of step (d) to provide a layer of zirconium dioxide between the internal surface of the tube and the copper layer thereon.

4,364,782

PERMISSIBLE SLURRY EXPLOSIVE

Albert G. Funk; Daniel A. Wasson, and Joe N. Ikeda, all of Salt Lake City, Utah, assignors to IRECO Chemicals, Salt Lake City, Utah

Filed September 12, 1980, Ser. No. 186,371

Int. Cl.³ C06B *45/02*

U.S. Cl. 149—21 **13 Claims**

1. A permissible explosive composition comprising:

(a) inorganic oxidizer salt comprising at least about 15% by weight calcium nitrate;

(b) from about 10% to about 35% by weight water;

(c) from 5% to about 18% inert material;

(d) from about 2% to about 8% finely flaked aluminum particles; and

(e) cross-linking and thickening agents.

4,364,783

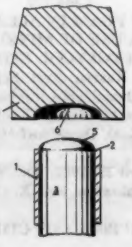
ULTRASONIC END-CAPPING OF BETA"-ALUMINA TUBES

Ares N. Theodore, Farmington Hills, and Robert A. Pett, Franklin, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed September 8, 1981, Ser. No. 300,404

Int. Cl.³ B29C *27/08*; C04B *35/44, 35/64*

U.S. Cl. 156—69 **29 Claims**



1. A method of ultrasonically end-capping a tubular green body which comprises:

(A) providing a tubular green body comprised of a mixture of about 40–60 volume percent sinterable particulate solids and

60–40 volume percent organic sacrificial binder, wherein said binder consists essentially of:

(a) a thermoplastic block copolymer component selected from the group consisting of linear, radial and linear and radial block copolymers, having a first aromatic block which is glassy or crystalline at 20°–25° C., and which has a softening point between about 80°–250° C. and a second aliphatic block which is different from said first block and behaves as an elastomer at temperatures between about 15° C. below and about 100° C. above said softening point of said first block;

(b) oil at least about 75 percent by weight of which boils in a range between about 285°–560° C., has a viscosity of between about 30–220 Saybolt Universal Seconds (SUS) at 100° C., and has an Aniline Point in the range between about 75°–125° C.;

(c) wax which melts at a temperature in a range between about 80° C. and at least 75 percent by weight of which boils at temperatures in a range between about 315°–490° C.;

(d) a first stiffening thermoplastic polymer which is glassy or crystalline at 20°–25° C., has a softening point between about 80°–250° C. and comprises aromatic monomeric units associable with the block copolymer (a);

(e) a second stiffening thermoplastic polymer, different from said first polymer and which is glassy or crystalline at 20°–25° C. and comprising aromatic monomeric units associable with the first block and has a softening point below about 80°–250° C.

(f) processing aid comprising an ester of fatty acids; and said sinterable particulate solids consisting essentially of a particle size distribution of beta"-alumina precursor particulate solids, the weight of (a) being greater than (b) and (c) combined, greater than (d) and (e) combined and greater than about two times (b), (c), (d), (e) or (f) alone; and

(B) forming an end-cap of desired configuration having a composition comprising said mixture;

(C) applying pressure and ultrasonic vibrations by means of an ultrasonic horn to said tubular green body and end-cap between a tubular mandrel and said ultrasonic horn, said mandrel having a shaped end of desired configuration and the ultrasonic horn having a female mold shape adapted to receive said mandrel with said tubular body disposed therein;

(D) maintaining said pressure and ultrasonic vibrations for a time necessary for ultrasonic vibrations to travel to the tubular body end-cap interface, wherein they are dissipated in the form of frictional heat and melt said binder so as to weld the joining surfaces.

4,364,784

METHOD AND APPARATUS FOR CONTINUOUS APPLICATION OF FOAM TO A PLANAR TEXTILE STRUCTURE

Kurt Van Wersch, Wegberg, and Manfred Pabst, Cologne, both of Fed. Rep. of Germany, assignors to A. Monforts, Monchen-Gladbach, Fed. Rep. of Germany

Filed September 30, 1980, Ser. No. 192,302

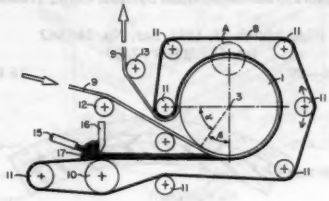
Claims priority, application Fed. Rep. of Germany, October 1, 1979, 2939797

Int. Cl.³ B32B *31/16*

U.S. Cl. 156—78 **8 Claims**

1. Method of continuously applying a foamed treatment medium to a planar textile structure which comprises applying the foam directly to the surface of an air-impermeable planar follower, guiding the planar follower synchronously into areal contact with the planar textile structure, and transferring the foam from the surface of the planar follower into the planar textile structure while the planar follower and the planar textile structure are in areal contact by applying vacuum to a side of the planar textile structure opposite the air-impermeable planar follower.

6. Apparatus for performing a method of continuously applying a foamed treatment medium to a planar textile structure comprising a drum having, at the shell surface thereof, an evacuatable support layer, an air-impermeable planar follower spanning part of the drum periphery in areal contact with and for guiding the planar textile structure on the drum shell surface, said planar follower having an inlet section supported by at least one roller, means disposed at said inlet section for



supplying foam to be applied between said planar textile structure and said planar follower, a wiper disposed opposite said one roller for uniformly distributing foamed treatment applied to the planar follower region preceding said wiper means for supplying suction through said support layer to a side of the planar textile structure opposite said air-impermeable planar follower, and means for separating the planar textile structure and the planar follower from one another.

4,364,785

ASSOCIATION OF A PIECE OF FABRIC WITH A SHEET OF PVC

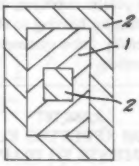
Michel Wajs, and Helene Wajs, both of rue de Fiennes 61, 1070 Bruxelles, Belgium

Continuation of Ser. No. 89,892, Oct. 31, 1979, abandoned. This application 1981, Ser. No. 239,131

Claims priority, application Belgium, October 11, 1979, 197590

Int. Cl.³ B32B *31/18, 31/20*

U.S. Cl. 156—88 **3 Claims**



1. In a process of making a composite article comprising a layer of fabric and a superposed layer of thermoplastic material, the combination of steps of:

cutting only said fabric to predetermined shape by cutting said fabric along an outer periphery and also along an inner periphery defining an opening in the fabric,

placing on one side only of said fabric a sheet of said plastic material which completely covers said fabric and extends beyond all peripheral edges of said fabric,

welding said plastic sheet to said fabric along a first weld line inwardly of the outer periphery of said fabric and along a second weld line adjacent but outwardly of said inner periphery of the fabric,

cutting said plastic sheet along a first line inwardly of said first weld line and along a second line outwardly of said second weld line,

removing that portion of said plastic sheet between said first and second cutting lines, and

cutting said plastic sheet along a line outwardly of the outer periphery of said fabric to sever a marginal portion of said

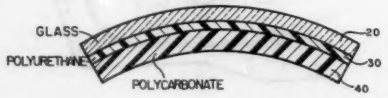
plastic sheet, and removing the severed marginal portion of said plastic sheet.

4,364,786

PROCESS FOR MAKING SAFETY GLASS LAMINATES SUBJECT TO NONSYMMETRICAL THERMAL STRESS

W. Novis Smith, Jr., and Nelson P. Bolton, both of Quakertown, Pa., assignors to Advanced Glass Systems Corp., Trumbauersville, Pa.

Filed March 23, 1981, Ser. No. 246,662
Int. Cl.³ B32B *17/00*
U.S. Cl. 156—99 16 Claims



1. A process for producing a non-symmetrical laminate of glass and plastic comprising the steps of:

(a) treating a glass blank with a difunctional silane coupling agent;

(b) forming a first laminate by placing the glass blank against a sheet of an aliphatic polyether polyurethane, and heating to about 200°–220° F.; and,

(c) forming a second laminate of said initial laminate and a plastic sub-layer by placing sub-layer against the aliphatic polyether polyurethane, and simultaneously heating to about 130°–160° F. and pressurizing to about 150 psi for about one hour, whereby non-symmetrical thermal shear stresses between the first and second laminates are minimized.

9. A process for producing a non-symmetrical laminate of glass and plastic comprising the steps of:

(a) treating a glass blank with a difunctional silane coupling agent;

(b) injecting an uncured aliphatic polyurethane having a polyether backbone and a curing accelerator between said glass blank and a plastic sublayer; and,

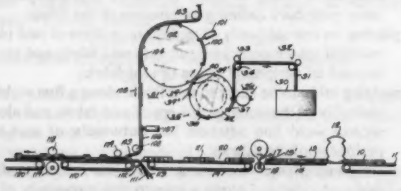
(c) curing said product by heating to about 100° F. for about one hour, whereby non-symmetrical thermal shear stresses are minimized.

4,364,787

APPARATUS FOR APPLYING ELASTIC RIBBON SEGMENTS TO DIAPERS

Edmund Radzins, Sheboygan Falls, Wis., assignor to Curt G. Joa, Inc., Sheboygan Falls, Wis.

Continuation of Ser. No. 180,256, Aug. 22, 1980, abandoned.
This application August 24, 1981, Ser. No. 295,338
Int. Cl.³ B32B *31/08*
U.S. Cl. 156—164 9 Claims



1. A method of fixing elastic ribbon segments between interfacing nominally inelastic flexible sheets comprising an article such as a diaper in which it is desired to develop elasticity in at least one direction for inducing at least a portion of the article to conform to the contour of a body portion when the article is applied to a body, said method including the steps of:

releasably securing unstretched segments of said elastic ribbon successively to a first transport device moving at a first velocity for the leading end of the segment to arrive at a place adjacent a second transport device moving at a second velocity which is higher than said first velocity,

engaging the leading end of the segment with the higher velocity second transport device at said place while the trailing end remains secured to the first lower velocity transport device such that said elastic ribbon segment will be stretched,

engaging the trailing end of the stretched elastic segment with said second transport device and substantially simultaneously releasing said trailing end from the first transport device for said stretched segment to be transported solely on said second device in stretched condition,

causing a moving one of the flexible sheets of which said article is comprised and a stretched elastic segment being transported to come into contact relationship after a selected one or the other of said segment or sheet has had adhesive applied for adhering said stretched segment and sheet together,

then running said first sheet in contact with a moving second one of said sheets comprising the article for adhering said sheets together where one or the other of said segment or said sheet has had adhesive applied, and

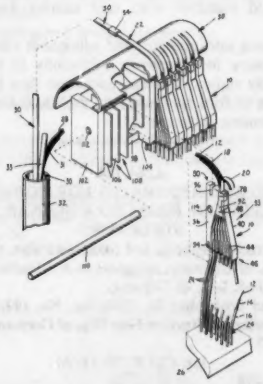
cutting said sheets transversely remotely from the ends of the stretched segments to yield individual flexible articles and enable said stretched segments to contract the regions of said articles to which they are applied.

4,364,788

METHOD OF FORMING A FIBER RIBBON CABLE UNIT

Lonnie B. Bloodworth, Jr., Tucker; Christian Scholly, Atlanta, and Thomas L. Williford, Jr., Lawrenceville, all of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 104,245, Dec. 17, 1979, Pat. No. 4,305,642.
This application August 13, 1981, Ser. No. 292,366
Int. Cl.³ B32B *5/00*; G02B *5/16*
U.S. Cl. 156—179 6 Claims



1. A method of forming a fiber ribbon cable unit from a plurality of individual fibers, comprising the steps of:

attaching an end portion of a first flexible strip to an exit end of a fiber-receiving transition means such that the strip extends outwardly from the exit end of the transition means;

positioning first portions of the individual fibers adjacent an entrance end of the fiber-receiving transition means in spaced relationship such that the first fiber portions extend outwardly from the entrance end of the transition means

in an individual configuration for connection to associated equipment;

mounting second intermediate portions of the individual fibers in respective converging channels in the fiber-receiving transition means such that third portions of the fibers exit from an exit passage in the transition means in closely adjacent relationship;

mounting the third portions of the fibers in a planar array on the outwardly extending first flexible strip;

positioning a second flexible strip over the third portions of the fibers on the outwardly extending first flexible strip; and

bonding the first and second flexible strips to one another with the third portions of the fibers therebetween, to form the fiber ribbon cable unit such that the fiber ribbon cable unit extends outwardly from the exit end of the fiber-receiving transition means.

5. A method of forming a fiber ribbon cable unit from a plurality of individual fibers of insulated construction having first, second and third insulated portions, comprising the steps of:

stripping the insulation from the insulated third portions of the fibers;

stripping the insulation from parts of the insulated second portions of the fibers to form end surfaces on the insulation intermediate opposite ends of the second portions;

positioning the insulated first portions of the individual fibers adjacent an entrance end of a fiber-receiving transition means in spaced relationship;

mounting the second portions of the individual fibers in the fiber-receiving transition means in converging relationship such that the third insulation-stripped portions of the fibers exit from an exit passage in the transition means in closely adjacent relationship;

abutting the end surfaces on the remaining insulation on the second portions of the fibers against internal stop surfaces of the fiber-receiving transition means to locate the second portions of the optical fibers in the transition means;

attaching an end portion of a first flexible strip to an exit end of the fiber-receiving transition means;

mounting the insulation-stripped third portions of the fibers in a planar array on the first flexible strip;

positioning a second flexible strip over the insulation-stripped third portions of the fibers on the first flexible strip; and

bonding the first and second flexible strips to one another with the insulation-stripped third portions of the fibers therebetween, to form the fiber ribbon cable unit.

4,364,789
METHOD OF MAKING LATERALLY CURVED DECORATIVE TRIM STRIP ASSEMBLY

Eric Moran, Burlington, Canada, assignor to P.V. Trim Limited, Mississauga, Canada

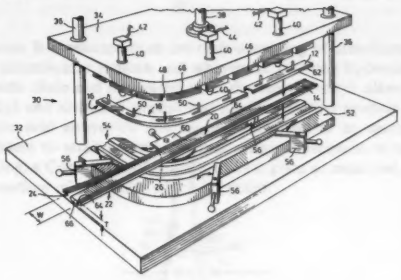
Filed 1981, Ser. No. 233,047
Int. Cl.³ B32B *31/18*
U.S. Cl. 156—214 **4 Claims**

1. A method of making a decorative trim strip assembly having a laterally curved portion formed therein, comprising the steps of:

providing an elongated polymeric resinous material strip element having substantially greater width than thickness, and having a substantially planar first surface; and a substantially rigid metallic backing plate having a substantially planar face, and having a laterally curved portion formed therein to a desired configuration in a plane parallel to said substantially planar face;

making at least one longitudinal slit in said polymeric resinous material strip element, and placing said slitted element in a jig having the desired configuration and holding the same therein so that said slit extends in said strip element from a place situated beyond a first end of said curved portion to the end of said strip element which is beyond said curved portion remote from said first end thereof;

and bonding said substantially planar face of said backing plate to said substantially planar first surface of said strip element;

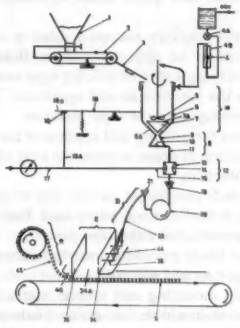


and thereafter cutting off the ends of any slit portions of said slitted strip element extending beyond a pre-determined distance relative to the end of said backing plate.

4,364,790
APPARATUS FOR MAKING PLASTER BOARD

Adrien Delcoigne, Chantilly, and Jacques Lanneau, Breuil-le-Vert, both of France, assignors to Saint Gobain Industries, Neuilly, France

Division of Ser. No. 3,414, Jan. 15, 1979, Pat. No. 4,288,263. This application November 26, 1980, Ser. No. 210,681
Claims priority, application France, 1978, 78 03473; 1978, 78 03474; 1978, 78 03475
Int. Cl.³ B32B *13/04, 13/14*
U.S. Cl. 156—346 **22 Claims**



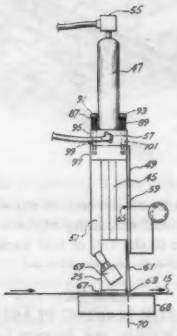
1. A device for making board from a fluid evolutive product including a moving conveyor, a reservoir having an open bottom above the conveyor and having a downstream wall which, with the conveyor, forms a transverse slit for the movement of fluid evolutive product away from the reservoir, means for moving the conveyor to pass the product from the reservoir through the slit to form the board, a plurality of product supply tubes extending through the downstream wall for discharging the fluid product into the reservoir, means including horizontal spaced nozzles on said supply tubes for continuously introducing streams of fresh fluid evolutive product substantially horizontally into the reservoir, and means for discharging the product through the nozzles into the reservoir with such force as to eliminate dead spots and prevent premature hardening of said product.

4,364,791

SPLICER ASSEMBLY FOR A TAPE CASSETTE LOADER

David W. Kincheloe, West Chicago, Ill., assignor to King Instrument Corporation, Westboro, Mass.

Filed September 2, 1980, Ser. No. 183,472
Int. Cl.³ B31F 5/06; G03D 15/04
U.S. Cl. 156—506 10 Claims



1. For use in a high-speed cassette loader, a magnetic tape splicer assembly for splicing a magnetic tape junction with a strip of splicing tape, said splicer assembly comprising in combination:

a tape applicator slidably mounted relative to a magnetic tape junction to be spliced, said applicator including means for carrying a strip of splicing tape and applying the same across the junction as said applicator is moved into close relationship with the tape junction;

guideway means for guiding said applicator into relationship with the junction in order to press the strip of splicing tape across the junction;

a first cutter blade positioned on one side of said applicator and having a first cutting edge, said first cutter blade spaced a distance above the tape junction;

a second cutter blade including a second cutting edge and a blunt edge at one end thereof;

means pivotally mounting said second cutter blade to said applicator so that said second cutter blade confronts said first cutter blade and said one end of said blade may be moved away from said applicator;

means for feeding a length of a web of splicing tape between said first and second cutting edges;

biasing means maintaining said second cutter blade against said first cutter blade as said applicator is moved along said first cutter blade and rotating said one end of said second cutter blade away from said applicator as said applicator moves subjacent to said first cutter blade so as to (a) move said blunt edge of said second cutter blade into a position wherein said blunt edge may contact said magnetic tape and (b) simultaneously move said second cutting edge of said second cutter blade to a position to prevent contact of said second cutting edge with the magnetic tape when said applicator is moved into close relationship with said tape junction.

4,364,792

PROCESS FOR THE PRODUCTION OF ADHESIVE METAL LAYERS ON NON-CONDUCTORS ESPECIALLY SYNTHETIC RESINS

Ralf Gliem, Wetter, and Reinhard Brandt, Marburg, both of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt am Main and Schoeller & Co., Elektronik GmbH, Wetter, both of, Fed. Rep. of Germany

Filed April 18, 1980, Ser. No. 141,301
Claims priority, application Fed. Rep. of Germany, April 20, 1979, 2916006
Int. Cl.³ B44C 1/22; B05D 3/06
U.S. Cl. 156—628 8 Claims

1. In a process for the production of an adhesive metal coating on a non-conductor chemically, by evaporation in a vacuum or by sputtering through roughening, the region of the surface to be coated by means of an etching process before the metallization, the improvement comprising exposing the region of the surface to be coated before the etching process to heavy ion radiation, the heavy ions having a mass of at least 10 and an energy of greater than 0.1 meV per nucleon.

4,364,793

METHOD OF ETCHING SILICON AND POLYSILICON SUBSTRATES

Clinton G. Graves, 241 Heather Pl., Danville, Calif. 94526

Filed August 28, 1981, Ser. No. 297,138
Int. Cl.³ H01L 21/306; B44C 1/22; C03C 15/00
U.S. Cl. 156—643 5 Claims

1. A method for etching silicon or polysilicon substrates comprising,

supporting silicon or polysilicon substrates in a plasma reactor, the substrates having a surface exposed to a reactive plasma etch within a region of said reactor,

injecting gaseous aluminum chloride to the plasma region, and

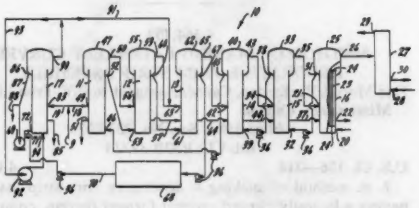
terminating the plasma etch after a desired depth of silicon or polysilicon has been removed from the substrate.

4,364,794

LIQUID CONCENTRATION APPARATUS

Henry G. Lankenau, Fort Myers, Fla., assignor to Ecodyne Corporation, Chicago, Ill.

Division of Ser. No. 110,417, Jan. 7, 1980, Pat. No. 4,265,701. This application November 20, 1980, Ser. No. 208,900
Int. Cl.³ B01D 1/06
U.S. Cl. 159—17 P 15 Claims



1. Apparatus for increasing the solids content of a liquid-solids mixture by evaporation comprising:

A. a concentrator having an entrance end and an exit end for said mixture;

B. a heat transfer surface connecting said entrance end with said exit end;

C. means capable of causing said mixture to flow past one side of said surface at a predetermined first velocity from said entrance end to said exit end;

D. means causing a heat transfer fluid to contact another side of said surface so as to convert a portion of the liquid in said mixture into heated vapor;

E. means for collecting said heated vapor;

F. means for passing a sufficient amount of the collected heated vapor at a predetermined second velocity through a vapor conduit into said entrance end where said heated vapor mixes with the incoming mixture; said means for passing and said conduit being sized and dimensioned to provide a flow of vapor sufficient to increase the velocity at which said mixture moves past said heat transfer surface to more than about 20 feet per second.

7. A multiple effect liquid evaporator for increasing the solids content of pulp and paper mill wastes comprising;

A. a plurality of liquid evaporator effects, each of which comprises;

1. an inlet for a liquid-solids waste mixture,
2. an outlet for heated vapor,
3. an outlet for the more concentrated liquid-solids waste mixture treated by each such effect,
4. an inlet for a heat transfer fluid, and
5. an outlet for said heat transfer fluid;

B. means for feeding said mixture into the inlet of the effect which operates at the lowest temperature, and means connecting the outlet for more concentrated liquid-solids waste mixture of an effect which operates at higher intermediate temperature to a concentrator for feeding said more concentrated liquid-solids waste mixture to said concentrator,

C. said concentrator comprising;

1. an entrance end and a discharge end for said mixture,
2. a series of heat transfer tubes connecting said entrance end to said discharge end,
3. means capable of pumping said mixture at a predetermined first velocity through said heat transfer tubes from said entrance end to said discharge end,
4. an entrance and an exit for steam and means for passing steam over the outside of said tubes so as to convert a portion of the liquid in said mixture into a heated vapor,
5. means for collecting said heated vapors, and
6. means forcing at least some of the collected heated vapor at a predetermined second velocity through a vapor conduit into said entrance end where said heated vapor mixes with the incoming mixture; said means forcing and said conduit being sized and dimensioned to enable said second velocity to be sufficiently greater than said first velocity, such that the velocity at which said mixture moves through said tubes is increased by said forced heated vapor sufficient to substantially prevent deposit of solids therewithin.

4,364,795

GYPSUM WALLBOARD AND METHOD FOR PRODUCING SAME

Arthur E. Kennedy, North Tonawanda, N.Y., assignor to National Gypsum Company, Dallas, Tex.

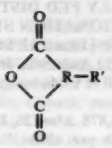
Continuation of Ser. No. 124,106, Feb. 25, 1980, Pat. No. 4,311,767. This application August 17, 1981, Ser. No. 293,114

The portion of the term of this patent subsequent to 1999, has been disclaimed.

Int. Cl.³ D21D *3/00*

U.S. Cl. 162—158 **6 Claims**

1. The method of treating paper which comprises completely forming a web of paper by a wet process of forming paper, drying at least partially said web of paper, and coating one surface of said at least partially dried web of paper with a synthetic size, said synthetic size being of the group consisting of (1) a cyclic dicarboxylic acid anhydride corresponding to the structural formula



wherein R is selected from the class consisting of dimethylene and trimethylene radicals and wherein R′ is a long hydrophobic side chain and is selected from the class of alkyl, alkenyl, aralkyl and aralkenyl groups and (2) the reaction product of maleic acid anhydride and an internal olefin in an amount sufficient to attain in said sheet, at a time subsequent to said coating, a Cobb value of about 0.4 to 1.0 gram as measured on the surface of said sheet which is coated.

4,364,796

METHOD AND SYSTEM FOR DISPOSING PYROLYSIS GAS

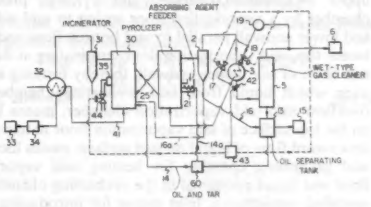
Yoshiaki Ishii; Naoyoshi Ando; Tsutomu Kume, and Shosaku Fujinami, all of Yokohama, Japan, assignors to Seiichi Ishizaka, President of Agency of Industrial Science and Technology, Tokyo, Japan

Filed 1981, Ser. No. 224,832

Claims priority, application Japan, 1980, 55-3578

Int. Cl.³ C10B *21/10*

U.S. Cl. 201—4 **3 Claims**



1. In a method for the treatment of pyrolysis gas generated in a thermal reactor to eliminate harmful gas therefrom, the method comprising the steps of:

supplying absorbing agent to the reactor together with materials to be pyrolyzed;

collecting solid particles of char and unreacted absorbing agent from the pyrolysis gas fed from said reactor by a dry type collector;

feeding said gas passed through said dry type collector to a wet type gas cleaner using water for further trapping oil and tar and other minute particles still remaining in said gas;

feeding the water trapped oil, tar and minute particles to a separating tank where the trapped items are settled; and

recirculating the solid particles collected at the dry type collector and the items settled in said separating tank to said reactor;

said method being characterized in that

a portion of said particles collected at said collector is fed to said separating tank for promoting the separation of the oil and tar in said tank.

4,364,797

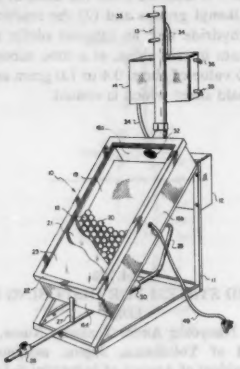
AUTOMATICALLY FED DISTILLATION AND FRACTIONATION SYSTEM

Boyd R. Beck, Spring City; Lamar H. Stewart, Gunnison; Steven Tapp, Ephraim; Don L. Anderson, Jr., Gunnison, and Daniel E. Nuffer, Ephraim, all of Utah, assignors to Stil Sun Oil, Inc., Centerfield, Utah

Division of Ser. No. 134,878, Mar. 28, 1980, Pat. No. 4,314,890, which is a continuation-in-part of Ser. No. 83,281, Oct. 10, 1979, abandoned. This application July 27, 1981, Ser. No. 287,239

Int. Cl.³ B01D *3/02, 3/42*

U.S. Cl. 202—181 5 Claims



1. A distillation system for the separation of liquid mixtures which comprises:

an inclined still consisting of sidewalls, a lower endwall, an upper endwall, a bottom floor, and a translucent light transmitting top all being joined together to form a sealed still compartment, said compartment being divided into an upper vaporization chamber and a lower preheating chamber by a vaporization floor sealed to said sidewalls and lower endwall parallel to said bottom floor and translucent top, said vaporization floor terminating at its upper end short of said upper endwall, thereby forming a baffle over which liquid from said preheating chamber may overflow into said vaporization chamber, means located on the top surface of said vaporization floor to impede the downward flow of liquid on said surface, means located in said preheating chamber for heating said vaporization floor and liquid contained in the preheating chamber to a specified temperature, inlet means for introducing liquid mixture feed into the lower end of said preheating chamber, outlet means for removing residual liquid from the lower end of said vaporization chamber, and outlet means in said upper endwall for removing vapors formed within the still compartment;

feed control means interconnected with the inlet means to said preheating chamber for controlling the amount of liquid that flows thereinto, said feed control means consisting of a feed chamber having an inlet and an outlet and a hydraulically operated float control valve, which valve controls the flow of feed liquid through the feed chamber to the preheating chamber, said float control valve being selectively positioned substantially level with said baffle, such that, when liquid in the preheating chamber is below a specified temperature, the valve will remain closed, and when liquid in the preheating chamber is raised to at least said specified temperature, the liquid in the preheating chamber expands in volume, thereby becoming less dense, and is pushed over the baffle end of the vaporization floor by the more dense, cooler liquid feed in the feed chamber that flows by gravity through the outlet of the feed chamber to the preheating chamber, the exiting of liquid feed from the feed chamber causing the float control valve to open, thereby allowing feed liquid to flow through the inlet to the feed chamber as long as the temperature of the feed liquid in the preheating chamber is above the specified temperature and the feed liquid is overflowing the baffle end of the vaporization floor; and

an insulated condensation section interconnected with said still compartment consisting of a fractionation column which receives distilled vapors from the outlet means in the upper endwall of the still compartment, and condenser means for receiving and condensing vapors from the fractionation column into a distillate.

4,364,798

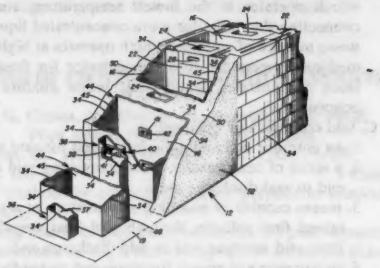
REBUILT COKE OVEN HEATING CHAMBER AND METHOD OF MAKING THE SAME

Richard A. Costa, Mingo Junction, Ohio, assignor to BMI, Inc., Pittsburgh, Pa.

Filed December 30, 1980, Ser. No. 221,310

Int. Cl.³ C10B *29/06;* E04B *1/16;* E04G *21/02;* F27D *1/16*

U.S. Cl. 202—267 R 15 Claims



12. A coke oven comprising,

a heating chamber and a coking chamber,

said heating chamber including a wall portion forming at least one passageway for the conveyance of gas through the heating chamber to heat said coking chamber,

a first portion of said heating chamber being formed by brickwork and a second portion of deteriorated brickwork being removed,

a reconstructed portion of said heating chamber positioned in place of said second portion of said deteriorated brickwork,

said reconstructed portion being formed of a refractory material applied by spraying in a configuration to rebuild said wall portion and said passageway of said second, removed portion, and

said reconstructed portion being connected to said brickwork of said first portion to form said reconstructed portion integral with said first portion and thereby form a unitary rebuilt portion of said heating chamber.

4,364,799

METHOD AND APPARATUS FOR CONTACTING WORK SURFACES WITH LIQUIDS

Emile Steiger, Pre-de L'etang, 1807 Blonay, Switzerland

Continuation of Ser. No. 862,652, Dec. 20, 1977, abandoned, which is a continuation of Ser. No. 726,746, Sep. 27, 1976, abandoned. This application May 4, 1979, Ser. No. 36,168

Claims priority, application Switzerland, September 27, 1975, 12572/75

Int. Cl.³ C25D *5/02*

U.S. Cl. 204—15 2 Claims

1. A method for electrochemical liquid treatment of surface portions of workpieces comprising the steps of:

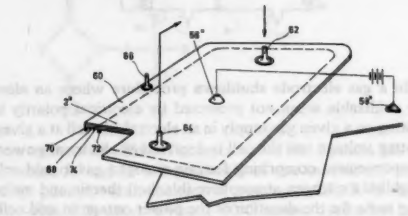
providing a single sheet of a flexible elastic material having an elastic sealing means located along its edges, said sealing means including a plurality of spaced adjacent walls

which extend generally parallel to one another to form a sealing space, spacer dimples being disposed within said sealing space to prevent its collapse;

forming a treatment chamber on a portion of the surface of the workpiece to be treated by forming the edges of said elastic material into a conforming shape with the periphery of the surface portion to be treated and the shape of the workpiece along its periphery, the surface portion of the workpiece being treated and said sheet of elastic material forming the treatment chamber;

applying a reduced pressure to the sealing space of said sealing means so as to firmly seal the sheet to the workpiece surface during treatment;

providing at least one treatment liquid and a closable supply container therefor;



providing (i) an electrode for said workpiece (ii) an electrode for said sheet positioned to contact said treatment liquid while within the chamber, and (iii) an electric current between said electrodes;

providing an inlet conduit and an outlet conduit at spaced locations on said sheet to provide communication between the treatment chamber and the treatment liquid supply container through the inlet conduit;

providing an inert gas under pressure;

opening the supply container and feeding the treatment liquid via said inlet conduit to said treatment chamber and withdrawing it through the outlet conduit under the pressure of said inert gas so the treatment liquid flows across the surface portion of the workpiece to treat it electrochemically, and the liquid and the surface under treatment are protected from the atmosphere.

4,364,800

SITU METAL PLATING OF THE CATHODE TERMINAL SURFACE OF AN ELECTROCHEMICAL CELL

Alan H. Partridge, Horshan, England, assignor to Duracell International Inc., Bethel, Conn.

Filed December 19, 1980, Ser. No. 218,223

Claims priority, application United Kingdom, May 23, 1980, 8017192

Int. Cl.³ C25D *5/02, 5/34*

U.S. Cl. 204—15 **10 Claims**

1. A process for making a sealed electrochemical cell with a cathode terminal having a metal plated solely on the external exposed surface thereof with the remaining surface portion thereof being within the cell, unexposed, and unplated, comprising the steps of assembling said cell using an unplated cathode terminal; thereafter immersing the electrochemical cell in an aqueous metal plating solution containing metal ions, whereby said cell is in direct contact with said plating solution; permitting said cell to remain in contact with said plating solution for a time sufficient to permit the cell's electrical output to cause metal ions to deposit as a film on the entire exposed surface of said cathode terminal of said cell; and removing said cell from said plating solution, whereby said cell has a metal plated solely on the external exposed surface of said cathode terminal.

4,364,801

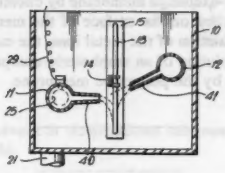
METHOD OF AN APPARATUS FOR SELECTIVELY SURFACE-TREATING PRESELECTED AREAS ON A BODY

Amir Salama, Cartierville, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed June 29, 1981, Ser. No. 278,865

Int. Cl.³ C25D *5/02, 17/00*

U.S. Cl. 204—15 **21 Claims**



1. A method of electro-plating a front surface of an elongate terminal pin having a rectangular cross-section;

including ejecting a plating solution against the front surface of said pin and ejecting a gas to prevent wetting of a back surface and both side surfaces of the pin.

4,364,802

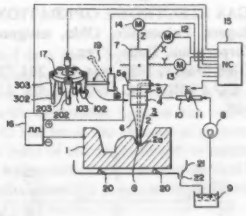
SCANNING ELECTRODE VIBRATION ELECTRODEPOSITION METHOD

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed March 5, 1981, Ser. No. 240,919

Int. Cl.³ C25D *5/04*

U.S. Cl. 204—23 **20 Claims**



1. A method of electrodeposition, comprising the steps of:

spacedly juxtaposing a substrate with an electrode having a relatively small area in the region thereof confronting said substrate to define a small electrodeposition gap therebetween;

flushing said electrodeposition gap with a liquid electrolyte;

passing an electric current through said gap between said electrode and said substrate to electrodeposit a metallic substance from said liquid electrolyte onto said substrate;

imparting high-frequency mechanical vibrations to said electrode; and

relatively displacing said electrode and said substrate to cause said electrode area to sweep over at least a selected surface area of said substrate, thereby forming thereon a layer of the electrodeposition of a predetermined thickness.

4,364,803

DEPOSITION OF CATALYTIC ELECTRODES ON ION-EXCHANGE MEMBRANES

Antonio Nidola, and Gian N. Martelli, both of Milan, Italy, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed December 2, 1980, Ser. No. 212,173

Int. Cl.³ C25D 5/00, 9/04, 17/00

U.S. Cl. 204—30 17 Claims

1. A process for producing a metal coating on the surface of a polymeric ion-exchange membrane by chemical reduction of metal ion adsorbed on the surface of the membrane wherein prior to the reduction of the metal ions, the membrane is contacted with a solution of an amphoteric compound capable of being adsorbed by the polymeric membrane.

4,364,804

BATH FOR THE GALVANOPLASTIC DEPOSITION OF A YELLOW-GOLD TINTED METALLIC ALLOY

Pino Aliprandini, 98D, route de Thonon, Vesenaz, Geneve, Switzerland

Continuation-in-part of Ser. No. 159,300, Jun. 13, 1980, abandoned. This application July 16, 1981, Ser. No. 283,901

Claims priority, application Switzerland, March 17, 1980, 2067/80

Int. Cl.³ C25D 3/58

U.S. Cl. 204—44 1 Claim

1. An aqueous bath having a pH from 9 to 12 for the galvanoplastic deposition of a yellow-gold tinted metallic alloy on a nickel-plated, stainless steel or brass substrate containing 10 to 20 g/l of copper in the form of a double cyanide, 2 to 10 g/l of tin in the form of potassium stannate, 0.01 to 4 g/l of zinc in the form of a cyanide or sulfate, 2 to 50 mg/l of lead in the form of an acetate, 30 to 60 g/l of potassium and sodium double tartrate, 1 to 50 g/l of concentrated aqueous ammonia (28% NH_3), 1 to 20 g/l of potassium carbonate and a wetting agent.

4,364,805

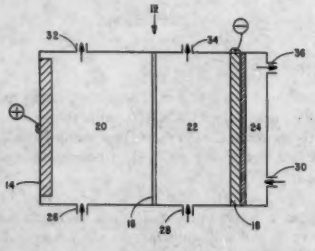
GAS ELECTRODE OPERATION

Douglas K. Rogers, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed May 8, 1981, Ser. No. 261,773

Int. Cl.³ C25B 1/34, 11/03, 11/08, 11/12

U.S. Cl. 204—98 6 Claims



1. In a method of operating a gas electrode employing an oxygen-containing gas; and a laminate oxygen cathode of a wetproofing layer containing polytetrafluoroethylene particles, an active layer containing carbon particles, and a current distributor: the improvement which comprises feeding the oxygen-containing gas to the oxygen cathode at blow-through pressure.

4,364,806

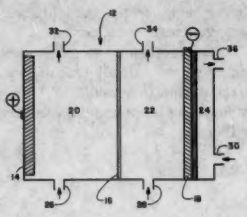
GAS ELECTRODE SHUTDOWN PROCEDURE

Douglas K. Rogers, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed May 8, 1981, Ser. No. 261,774

Int. Cl.³ C25B 1/34, 11/08, 11/12

U.S. Cl. 204—98 8 Claims



1. In a gas electrode shutdown procedure where an electrode oxidizable when not protected by electrical polarity is operating on a given gas supply in an electrolytic cell at a given operating voltage and the cell is deprived of electrical power, the improvement comprising feeding nitrogen gas to said cell to establish a nitrogen atmosphere (blanket) therein and maintaining same for the duration of the power outage to said cell.

4,364,807

METHOD OF ELECTROLYTICALLY RECOVERING ZINC

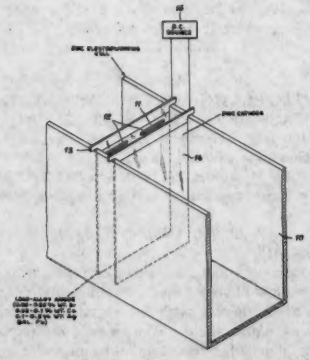
Adolf von Röpenack; Günter Stock, both of Datteln, and Ulrich Heubner, Bad Homburg, all of Fed. Rep. of Germany, assignors to Ruhr Zink GmbH, Datteln, Fed. Rep. of Germany

Filed 1981, Ser. No. 233,491

Claims priority, application Fed. Rep. of Germany, 1980, 3005674

Int. Cl.³ C25B 11/03; C25C 1/16

U.S. Cl. 204—114 3 Claims



1. A method of electrolytically recovering zinc from an acid eletrolyte comprising the steps of immersing an anode consisting of essentially 0.1 to 0.5% by weight silver, at least one element selected from the group which consists of 0.05 to 0.25% by weight strontium and 0.05 to 0.1% by weight calcium, balance lead, in said electrolyte and juxtaposing said anode with a cathode; and electrolyzing said electrolyte between said anode and said cathode to deposit zinc on said cathode.

4,364,808

PHOTOCHEMICAL PREPARATION OF SILANES CONTAINING IMIDE GROUPS

Dieter Lohmann, Muttenz, and Siegfried Wyler, Dornach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

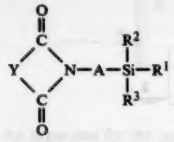
Division of Ser. No. 67,864, Aug. 20, 1979, Pat. No. 4,271,074. This application December 15, 1980, Ser. No. 216,355

Claims priority, application Switzerland, August 30, 1978, 9154/78

Int. Cl.³ B01J 19/12

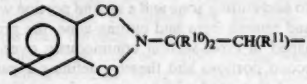
U.S. Cl. 204—158 R 5 Claims

1. A composition of matter obtained by irradiating a compound of the formula III

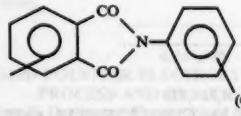


(III)

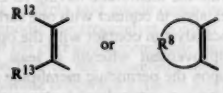
or a mixture of different compounds of the formula III, in which R^1 and R^2 independently of one another are methyl, ethyl, phenyl, vinyl, chlorine or a group —OR, R^3 is chlorine or —OR, R is alkyl having 1–10 C atoms, cycloalkyl having 5–8 C atoms or phenyl, A is a substituted or unsubstituted, divalent, saturated or unsaturated, aliphatic, cycloaliphatic, aliphatic-aromatic or aromatic radical, where the aliphatic radicals A or aliphatic moieties of aliphatic-aromatic radicals A can be interrupted by hetero-atoms, or A is a grouping



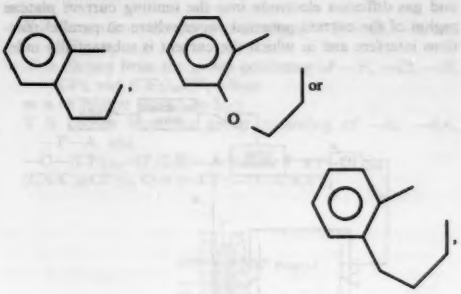
or a grouping



and in the two last-mentioned groupings the bond to the particular N atom is effected via the free valency in the benzene nuclei, R^{10} is hydrogen, methyl or ethyl, R^{11} is hydrogen or alkyl having 1 to 10 C atoms, d is a number from 0 to 6, c is a number from 1 to 6 and M is —O—, —NH—or —$N(R^{11})$—, and in which Y is



R^{12} and R^{13} independently of one another are hydrogen, methyl, phenyl, —CN or halogen and R^8 is alkylene having 3 or 4 C atoms, which can be branched and can be interrupted by a hetero-atom, or is one of the radicals



in an organic solvent at temperatures between 5° C. and 120° C. with UV light.

4,364,809

METHOD FOR PREPARING CURED RUBBERY PRODUCTS OF ORGANOPOLY-SILOXANES

Yasuhiko Sato; Hiroshi Inomata, and Hiroshige Okinoshima, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

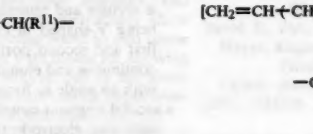
Filed March 5, 1980, Ser. No. 127,523

Claims priority, application Japan, March 19, 1979, 54-32130; March 26, 1979, 54-35221

Int. Cl.³ C08F 2/48, 130/08

U.S. Cl. 204—159.13 5 Claims

1. A method for the preparation of a rubbery cured product of an organopolysiloxane which comprises irradiating an organopolysiloxane containing aliphatically unsaturated groups and having a substantially linear molecular structure as represented by the general formula



wherein

R^1 is a methyl or a phenyl group

R^2 is a substituted or unsubstituted monovalent hydrocarbon group, m is zero, a is 2 or 3, and n is zero or a positive integer, with ultraviolet light in the wavelength region from 100 to 300 nm in the absence of a photosensitizer and the molar ratio of the aliphatically unsaturated groups to all of the hydrocarbon groups represented by the symbol R^2 in a molecule of the organopolysiloxane is 10% or less.

4,364,810

ELECTROCHEMICAL GAS DETECTION SYSTEM

Gerardo A. Razumney, Philadelphia, Pa., assignor to Rexnord, Incorporated, Milwaukee, Wis.

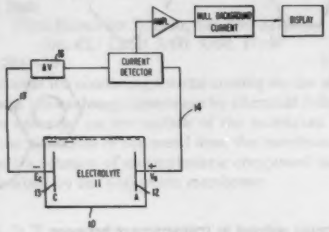
Division of Ser. No. 813,394, Jul. 6, 1978. This application December 6, 1979, Ser. No. 100,805

Int. Cl.³ G01N 27/28, 27/54

U.S. Cl. 204—195 R 10 Claims

1. A polarographic electrochemical system for measuring the concentration of an electrochemically oxidizable gas in a gaseous sample consisting of (a) a gas diffusion sensing anodic electrode exposed to the sample gas and including an electrocatalyst, (b) a non-polarizable, reducible counter electrode, (c) an electrolyte in contact with both said electrodes, (d) means for applying a selected constant potential difference in the range of between 0.9 to 1.4 V versus a reversible hydrogen

electrode in the same solution to said electrodes so as to bias said gas diffusion electrode into the limiting current plateau region of the current-potential curve where no parallel reactions interfere and in which the current is substantially independent of the potential for oxidation of the electrochemically oxidizable gas, and (e) means for measuring the current flowing between said electrodes as an indication of the electrochemically oxidizable gas in the gaseous sample.



4,364,811

ELECTRODES FOR ELECTROLYTIC CELLS

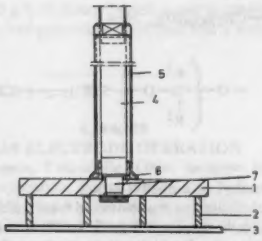
Peter Fabian; Karlheinz Eisenhuth, both of Freigericht; Ernst Jedlitschka, Bruchköbel, and Helmut Krebs, Freigericht, all of Fed. Rep. of Germany, assignors to Heraeus Elektroden GmbH, Hanau am Main, Fed. Rep. of Germany

Filed December 3, 1980, Ser. No. 212,570

Claims priority, application Fed. Rep. of Germany, December 8, 1979, 2949495

Int. Cl.³ C25B *9/04, 11/02*

U.S. Cl. 204—220 **17 Claims**



1. An electrode for electrolytic cell comprising:

(a) a means for supplying electric current;

(b) a main current distributor;

(c) rectangular-sectioned conductors having flat activated electrode faces and arranged standing upright, the ratio of the width to height of a cross-section being from about 1:5 to about 2:3; and

(d) flat, rectangular-sectioned current distributors arranged perpendicularly to the conductors (c) and spaced from about 30 to about 150 mm apart, the ratio of the width to height of a cross-section being smaller than that for the cross-section of conductors (c), the ratio of free passage area to projected area in the zone of the conductors (c) being from about 20:30 to about 60:80 and conductors (c) being connected to current distributors (d), which are in turn connected to main current distributor (b) and the components (b), (c), and (d) being arranged in three planes above each other, perpendicular to each other in adjacent planes, and all consisting of flat sections having rectangular cross-sections.

4,364,812

GUIDE BODY MEMBER FOR A WIRE ELECTRODE IN A WIRE-CUTTING ELECTROEROSION MACHINE

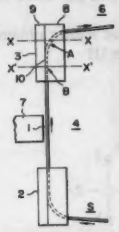
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed 1981, Ser. No. 229,549

Claims priority, application Japan, 1980, 55-9740[U]

Int. Cl.³ B23P *1/12*; B23K *9/16*

U.S. Cl. 204—224 M **5 Claims**



1. A guide body for constituting at least one of a pair of guide members for a continuous wire electrode axially advanced continuously to travel through a cutting zone from an inlet side to an outlet side in a wire-cutting electroerosion machine having means for applying tension to the traveling-wire electrode across the inlet and outlet sides and the guide members disposed intermediate the inlet and outlet sides for rectilinearly supporting the traveling-wire electrode therebetween and positioning the axis thereof in a predetermined machining relationship with a workpiece in the cutting zone, the guide body comprising:

a first segment defining a continuous elongated wire-receiving groove having a first portion which is rectilinear and proximate to said cutting zone and a second portion which is arcuate and remote from said cutting zone, the groove being V-shaped in cross-section continuously over said first and second portions and thereby defining a pair of continuous and elongated wire-bearing surfaces adjoining with an angle to form a V-shaped in cross-section; and

a second segment coupled to said first segment for holding said wire electrode traveling in said first portion of the groove in a bearing contact with said surfaces in said first segment.

4,364,813

SOLID POLYMER ELECTROLYTE CELL AND ELECTRODE FOR SAME

Preston S. White, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 105,055, Dec. 19, 1979, abandoned. This application June 22, 1981, Ser. No. 276,124

Int. Cl.³ C25B *9/00, 11/03, 11/04, 13/08*

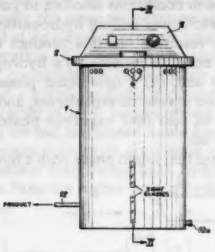
U.S. Cl. 204—252 **2 Claims**

1. In an electrolytic cell divided into two electrolyte compartments by a solid polymer electrolyte, said solid polymer electrolyte comprising a permionic membrane having an electrode pair of anodic electrocatalyst in contact with one surface thereof and cathodic electrocatalyst in contact with the opposite surface thereof, the improvement wherein at least one electrode removably bears upon the permionic membrane and comprises a catalyst carrier having particulate electrocatalyst material and fluorinated hydrophilic ion exchange material thereon, said fluorinated ion exchange material being adherent to the particulate electrocatalyst material and to the catalyst carrier.

4,364,814
APPARATUS FOR THE PRODUCTION OF AQUEOUS ALKALI METAL HYPOCHLORITE

Robert C. Langley, 214 Old Forge Rd., Millington, N.J. 07946

Filed May 20, 1981, Ser. No. 265,548
Int. Cl.³ C25B 9/00, 11/03, 11/10
U.S. Cl. 204—278 9 Claims



1. An apparatus for the controlled production of an aqueous alkali metal hypochlorite solution, which comprises:

(a) tank and means forming a vent at an upper part of said tank;

(b) a tank cover movably mounted on the upper end of said tank;

(c) an electrode assembly inserted into said tank and removable therefrom, said electrode assembly comprising an anode, a cathode, and a support holding the anode and the cathode at least one-half inch from one another, but in juxtaposed relation;

(d) a D.C. power source electrically connected to said anode and to said cathode;

(e) a partition within said tank dividing said tank into an upper compartment for containing brine and a lower compartment containing the electrode assembly, said partition defining at least one hole to controllably allow brine to pass from said upper compartment to said lower compartment and being provided with means for allowing hydrogen produced in the electrolytic cell in the lower compartment to pass through the brine in the upper compartment to then exit the tank through said vent; and

(f) means communicating with said lower compartment to remove aqueous alkali metal hypochlorite solution therefrom.

4,364,815
SOLID POLYMER ELECTROLYTE CHLOR-ALKALI PROCESS AND ELECTROLYTIC CELL

William B. Darlington, Portland, and Donald W. Dubois, Corpus Christi, both of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 120,217, Feb. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 76,898, Sep. 19, 1979, abandoned. This application June 22, 1981, Ser. No. 276,123
Int. Cl.³ C25B 11/02, 13/08
U.S. Cl. 204—283 5 Claims

1. In an electrolytic cell having an anode separated from a cathode by a permionic membrane, said anode and said cathode both contacting said permionic membrane, the improvement wherein said anode comprises a pervious substrate having anodic electrocatalyst bonded thereto, said anode bearing upon the permionic membrane, said cathode is bonded to and embedded in the permionic membrane, and said permionic membrane comprises a fluorocarbon resin having the moieties:

$\{CF_a\text{-}CXX'\}$

and

$\{CF_a\text{-}CXY\}$

where

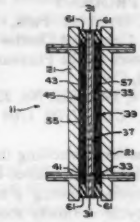
X is chosen from the group consisting of —F, —Cl, —H, and $—CF_3$;

X' is chosen from the group consisting of —F, —Cl, —H, $—CF_3$, and $(CF_2)_mCF$, where

m is an integer from 1 to 5;

Y is chosen from the group consisting of —A, —ϕA, —P—A, and

$—O—(CF_2)_n—(P,Q,R)—A$, where P is $(—CF_2)_a(CXX')_b(CF_2)_c$, Q is $(—CF_2—O—CXX')_d$



and R is $(—CXX'—O—CF_2)_e$, (P,Q,R) is or contains one or more of P, Q, and R n is 0 or 1; a,b,c,d, and e are integers from 0 to 6;

ϕ is a phenylene group and A is chosen from the group consisting of —COOH, —CN, —COF, —COCl, —COOR, —COOM, and $—CONR_2R_3$,

where R_1 is a C_1 to C_{10} alkyl group,

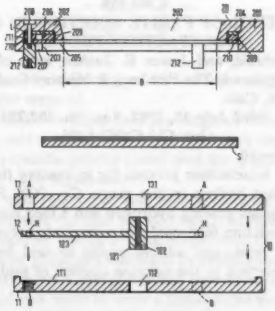
and R_2 and R_3 are chosen from the group consisting of —H, and

C_1 to C_{10} alkyl groups; and m is chosen from the group consisting of —H and alkali metals.

4,364,816
RECORD MATRIX PREPARATION

David E. Birt, Hanwell, England, assignor to EMI Limited, Hayes, England

Filed December 5, 1980, Ser. No. 213,483
Claims priority, application United Kingdom, December 7, 1979, 7942336
Int. Cl.³ C25D 1/10, 2/00
U.S. Cl. 204—297 W 4 Claims



1. An electroplating arrangement comprising a metal or metalised cathode plate suitable for use in production of a disc record matrix, a current terminal located on an axis intersecting substantially the centre of said cathode plate and an electrically conducting annular contact member, a clamping means including a current distribution member, said clamping means being adapted to hold said contact member against said cathode plate, said current distribution member establishing a sub-

stantially uniform distribution of current from said terminal to the contact member, wherein the distribution member comprises a plurality of spaced electrical conductors, said conductors comprising an electrically conductive strip extending substantially radially from a common location on said axis and including an electrically conductive linkage member connecting each said strip to the contact member.

4,364,817

METHOD FOR CONTROLLING BOILING POINT DISTRIBUTION OF COAL LIQUEFACTION OIL PRODUCT

Raymond P. Anderson, Overland Park, Kans.; David K. Schmalzer, Englewood, Colo., and Charles H. Wright, Overland Park, Kans., assignors to The Pittsburg & Midway Coal Mining Co., Englewood, Colo.

Filed March 4, 1981, Ser. No. 237,762
Int. Cl.³ C10G *1/00, 1/06*
U.S. Cl. 208—8 LE **27 Claims**

1. A continuous process for controlling the relative ratio of heavy distillate to light distillate produced in a coal liquefaction process, which comprises passing a mineral-containing feed coal, hydrogen, recycle normally solid dissolved coal, recycle mineral residue and a liquid solvent to a coal liquefaction zone, said liquid solvent comprising a heavy distillate and a light distillate in a predetermined ratio of heavy distillate to light distillate to dissolve hydrocarbonaceous material of said feed coal and to hydrocrack said hydrocarbonaceous material to produce a product fuel oil containing heavy distillate and light distillate, wherein the ratio of heavy distillate to light distillate in the product fuel oil varies inversely with the ratio of heavy distillate to light distillate in the liquid solvent, and continuously controlling the weight ratio of heavy distillate to light distillate in the fuel oil product by varying the weight ratio of heavy distillate to light distillate fed to the liquefaction zone inversely to the desired weight ratio of heavy distillate to light distillate in the fuel oil product, said heavy distillate and said light distillate in said liquid solvent comprising recycle distillate fractions, said heavy distillate boiling in the range of between about 550° F. (288° C.) to about 900° F. (482° C.) and said light distillate boiling in the range of between about 380° F. (193° C.) to about 550° F. (288° C.), said liquid solvent comprising heavy distillate and light distillate in a ratio of heavy distillate to light distillate of greater than 3:1 on a weight basis.

4,364,818

CONTROL OF PYRITE ADDITION IN COAL LIQUEFACTION PROCESS

Bruce K. Schmid, and James E. Junkin, both of Englewood, Colo., assignors to The Pittsburg & Midway Coal Mining Co., Englewood, Colo.

Filed July 15, 1981, Ser. No. 282,731
Int. Cl.³ C10G *1/06*
U.S. Cl. 208—10 **15 Claims**

1. A coal liquefaction process for increasing the amount of liquid product boiling in the range C_5—900° F. (482° C.), which comprises passing hydrogen and a feed slurry comprising a high calcium feed coal and a distillate solvent to a coal liquefaction zone, and adding pyrite to said feed slurry in inverse proportion to the calcium content of said feed coal.

4,364,819

CONVERSION OF ASPHALTENE-CONTAINING CHARGE STOCKS

Leroi E. Hutchings, Mt. Prospect, and Algie J. Conner, Downers Grove, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

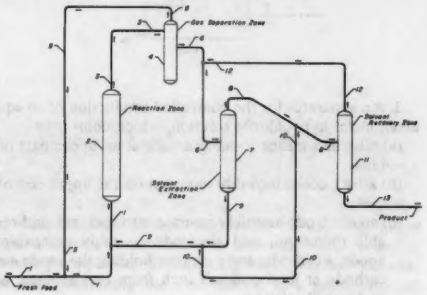
Filed April 24, 1981, Ser. No. 257,043
Int. Cl.³ C10G *67/04*
U.S. Cl. 208—96 **9 Claims**

1. A process for the conversion of an asphaltene-containing, hydrocarbonaceous black oil, and the recovery of deasphalted oil therefrom, which comprises the steps of:

(a) reacting said black oil, hydrogen, a first hereinafter described recycle stream comprising unreacted asphaltenes and a metal catalyst selected from the iron-group metals and the metals from Group V-B and VI-B, and a second hereinafter described recycle stream comprising a solvent rich liquid phase containing deasphalted oil, in a reaction zone at conversion conditions selected to convert asphaltenic material into lower-boiling hydrocarbons;

(b) separating the resulting reaction product effluent, in a first separation zone, to provide (i) a hydrogen-rich first vaporous phase and, (ii) a first liquid phase, containing metal catalyst and unreacted asphaltenes, and recycling at least a portion of said first vaporous phase to combine with said black oil;

(c) deasphalting said first liquid phase with a hydrocarbonselective solvent comprising a light hydrocarbon having from about 3 to about 9 carbon atoms per molecule in a solvent extraction zone to provide (i) a solvent rich second liquid phase, containing deasphalted oil, and, (ii) a solvent-lean mixture of unreacted asphaltenes and metal catalyst;



(d) recycling at least a portion of said solvent-lean mixture of unreacted asphaltenes and metal catalyst to combine with said black oil;

(e) recycling a portion of said solvent rich second liquid phase, containing deasphalted oil to combine with said black oil; and

(f) separating a portion of said solvent rich second liquid phase in a solvent recovery zone to provide (i) a stream comprising said hydrocarbon-selective solvent, and recycling at least a portion of said stream to said solvent extraction zone and (ii) a substantially solvent-free deasphalted oil.

4,364,820

RECOVERY OF C_3+ HYDROCARBON CONVERSION PRODUCTS AND NET EXCESS HYDROGEN IN A CATALYTIC REFORMING PROCESS

Richard R. DeGraff, Deerfield, and Kenneth D. Peters, Elmhurst, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed 1982, Ser. No. 337,191
Int. Cl.³ C10G *47/00*
U.S. Cl. 208—101 **9 Claims**

1. A hydrocarbon conversion process comprising the steps of:

(a) treating a hydrocarbonaceous feedstock in a reaction zone in admixture with hydrogen and in contact with a hydrocarbon conversion catalyst at hydrocarbon conversion conditions of temperature and pressure to provide a reaction zone effluent stream comprising normally liquid and normally gaseous hydrocarbon conversion products admixed with hydrogen;

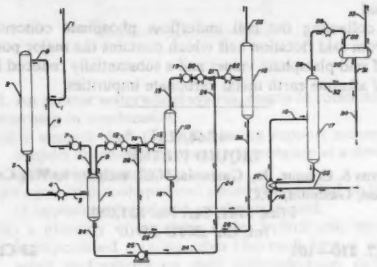
(b) treating said effluent stream in a first gas-liquid separa-

tion zone at a reduced temperature effecting the separation of a liquid hydrocarbon phase and a hydrogen-rich vapor phase;

(c) recycling a portion of said hydrogen-rich vapor phase to said reaction zone in admixture with said hydrocarbonaceous feedstock;

(d) admixing the balance of said vapor phase with a liquid hydrocarbon phase recovered from a third gas-liquid separation zone in accordance with step (f), and treating said mixture in a second gas-liquid separation zone at substantially the same temperature as said first separation zone and at an elevated pressure relative thereto to effect the separation of a liquid hydrocarbon phase having a reduced concentration of hydrogen and C_2- hydrocarbons, and a hydrogen-rich vapor phase having a reduced concentration of C_3+ hydrocarbons;

(e) treating the last mentioned liquid hydrocarbon phase in a fractionation column at conditions to separate an overhead fraction comprising light hydrocarbon conversion products from the higher boiling hydrocarbon conversion products;



(f) admixing the last mentioned hydrogen-rich vapor phase separated in accordance with step (d) with the liquid hydrocarbon phase separated in accordance with step (b), and treating said mixture in a third gas-liquid separation zone at substantially the same temperature as said second separation zone and at an elevated pressure relative thereto to effect the separation of a liquid hydrocarbon phase having a reduced concentration of hydrogen and C_2- hydrocarbons, and a hydrogen-rich vapor phase having a reduced concentration of C_3+ hydrocarbons; and,

(g) recovering said hydrogen-rich vapor phase, and admixing said liquid hydrocarbon phase with the hydrogen-rich vapor phase from step (b) in accordance with step (d).

2. The process of claim 1 further characterized in that said hydrocarbon conversion process is a catalytic reforming process wherein a naphtha feedstock is treated in a reaction zone in admixture with hydrogen and in contact with a reforming catalyst at reforming conditions including a temperature of from about 500° to about 1050° F. and a pressure of from about 50 to about 1200 psig.

4,364,821

FLUID CONTACTING PROCESS

Dennis E. O'Brien, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 173,560, Jul. 30, 1980, Pat. No. 4,307,063. This application September 11, 1981, Ser. No. 301,241

Int. Cl.³ C10G *21/22, 21/12*

U.S. Cl. 208—325 **3 Claims**

1. A liquid-liquid extraction process which comprises the steps of:

(a) passing a liquid-phase solvent stream into the upper portion of the vertically oriented extraction column and downward through the column, with the solvent stream traveling downward within an annular bed of contacting media which is vertically oriented and centrally located within the column;

(b) passing a liquid-phase feed stream comprising hydrocarbons into the bottom portion of the extraction column and upward through the column in a sigmoid path which includes a plurality of radial flow passages through the bed of contacting media, with each passage of the feed stream through the bed of contacting media being in the opposite radial direction and at a higher vertical elevation than the immediately preceding passage of the feed stream through the bed of contacting media;

(c) withdrawing a raffinate stream from the top portion of the extraction column; and,

(d) withdrawing an extract stream from the bottom portion of the extraction column.

4,364,822

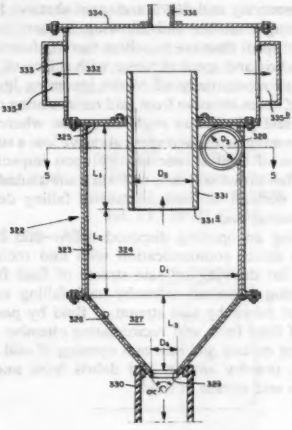
AUTOGENOUS HEAVY MEDIUM PROCESS AND APPARATUS FOR SEPARATING COAL FROM REFUSE

John W. Rich, Jr., Gilberton Coal Co., Gilberton, Pa. 17934

Continuation-in-part of Ser. No. 253,401, Apr. 13, 1981, abandoned. This application July 1, 1981, Ser. No. 279,627

Int. Cl.³ B03B *5/34;* B04C *5/081*

U.S. Cl. 209—3 **45 Claims**



34. A process for separating coal and refuse from raw input comprising the steps of:

screening said raw input to a size range of about 2″×0;

entraining said screened raw input in a heavy medium slurry having a specific gravity lower than the specific gravity of the coal to be separated;

admitting said raw input and heavy medium tangentially under pressure through an inlet into a substantially cylindrical chamber having an axial length slightly greater than its diameter to subject said input to a substantially constant acceleration for a predetermined time interval;

causing said raw input to enter a tapered chamber having an included cone angle of about 90° to about 120° at one end of said substantially cylindrical chamber for increasing the acceleration on the raw input;

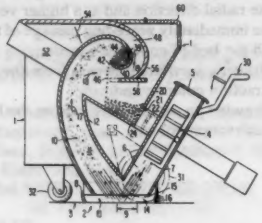
discharging a refuse-rich slurry through an orifice at the apex of said tapered chamber; and

exhausting coal-rich slurry from about the middle of said cylindrical chamber through a vortex finder of a predetermined inside diameter.

4,364,823
APPARATUS FOR SEPARATING ABRASIVE BLASTING MEDIA FROM DEBRIS

James R. Goff, Rte. 1, Box 247AB, Seminole, Okla. 74868

Filed 1981, Ser. No. 232,465
Int. Cl.³ B07B 7/04
U.S. Cl. 209—135 7 Claims



1. An apparatus for separating debris from spent abrasive in an abrasive blasting apparatus in which the debris and spent abrasive mixed in a stream of fluid are recirculated from a blast zone at high speed through a recirculating chamber comprising

means for providing said stream of fluid through said recirculating chamber;

means for receiving said debris and spent abrasive from said recirculating chamber and allowing a quantity of said debris and spent abrasive to collect thereby forming a pile of said debris and spent abrasive with a face of said pile exposed to substantially all of the incoming high speed debris and spent abrasive from said recirculating chamber; wherein said pile has an angle of repose whereby additional incoming debris and spent abrasive lose a substantial proportion of their kinetic energy upon impacting said face and fall down said face to form a substantially unobstructed, vertical, uniform curtain of falling debris and spent abrasive; and

means having an opening disposed below said receiving means in direct communication with said recirculating chamber for drawing off said stream of fluid from said recirculating chamber, whereby said falling curtain is washed of debris by said stream of fluid by passing the stream of fluid from said recirculating chamber through said falling curtain and into said opening of said drawing means to thereby entrain said debris from said falling curtain in said stream of fluid.

4,364,824
FLOTATION OF PHOSPHATE ORES CONTAINING DOLOMITE

Robert E. Snow, Lakeland, Fla., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed June 2, 1981, Ser. No. 269,448
Int. Cl.³ B03D 1/14
U.S. Cl. 209—167 23 Claims

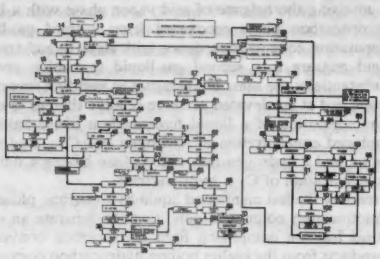
1. A flotation method for separating alkaline earth metal carbonate impurities from a deslimed sized phosphorite ore the steps comprising

(a) slurrying with water to about 20–25% solids a phosphorite ore fraction containing phosphate values and an excessive level of alkaline earth metal carbonate impurities, said phosphorite ore fraction having a particle size less than about 0.45 mm;

(b) reagentizing said phosphorite ore fraction by adding thereto a pH regulator to adjust the pH of said slurried phosphorite ore fraction to about 5.5–6.0, a carbonate collector comprising a water soluble salt of a sulfonated linear fatty acid having a straight carbon chain of 12 to 22 carbon atoms, said carbonate collector having a direct carbon to sulfur bond, and a phosphate depressant to depress the phosphate;

(c) subjecting said reagentized, slurried phosphorite ore fraction to flotation;

(d) separating the cell overflow which contains the major



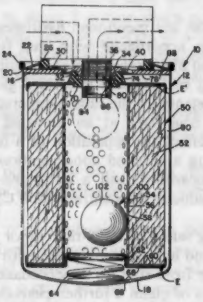
amount of said alkaline earth metal carbonate impurities; and

(e) collecting the cell underflow phosphate concentrate from said flotation cell which contains the major portion of said phosphate values and a substantially reduced level of alkaline earth metal carbonate impurities.

4,364,825
LIQUID FILTER

Augustus S. Connor, Jr., Gastonia, N.C., assignor to Wix Corporation, Gastonia, N.C.

Filed 1981, Ser. No. 231,050
Int. Cl.³ B01D 35/02
U.S. Cl. 210—109 13 Claims



1. A device for filtering fluid comprising:

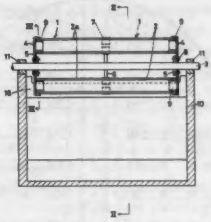
an elongate housing having an inlet and an outlet, both of which are situated at one end of said housing, said outlet having a main opening therein through which fuel flows;

an annular elongate filter means in said housing, said filter means having a bore defined longitudinally therethrough and positioned in said housing to be interposed between said housing inlet and outlet and to have said bore in fluid communication with said outlet;

outlet blocking means located within said filter means bore and positioned to be in alignment with said outlet main opening, said outlet blocking means being composed of a material which floats in water but does not float in the fluid being filtered and being located to be lodged against said outlet main opening to prevent fuel from passing into said main opening when a predetermined amount of water has been collected in said housing, said outlet blocking means being sized and positioned to permit essentially full flow of fuel into said main opening until said predetermined amount of water has been collected in said housing.

then to block said main opening essentially immediately when said predetermined amount of water has been collected so that an on-off action occurs.

4,364,826
WATERWHEEL SYSTEM FOR AERATION
Masashi Kato, Daito-shi, Japan
Filed April 13, 1981, Ser. No. 253,600
Int. Cl.³ C02F *3/08*
U.S. Cl. 210—150 **6 Claims**



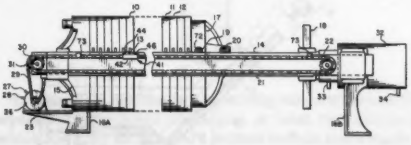
1. An aerator waterwheel system, means to rotate said shaft; comprising in combination:

(a) a support shaft (3) with bearing support means (11) to support the shaft above water for rotation at a slow rate of speed at a workstation;

(b) a pair of disc-shaped end plates (4) mounted on said shaft at opposite sides of said workstation; and,

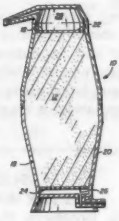
(c) a plurality of synthetic resin, cylindrical, interwoven honeycombed rotating tubes (2*a*) each having numerous small perforations on their circumference, each being disposed between said end plates (4) and rigidly secured thereto substantially at the periphery thereof, each with a central axis disposed parallel to said shaft (3) and encircling the same so as to form waterwheel wings (2) around said shaft, said wings being so disposed at said workstation that the tubes when in the lower phase of a cycle of rotation are immersed in water, said shaft being rotated at a slow speed so that splashing does not occur.

4,364,827
HYDRAULIC FILTER PLATE SHIFTER
Murray M. Guttman, Saddle Brook, N.J., assignor to Envirotech Corporation, Menlo Park, Calif.
Continuation of Ser. No. 940,916, Sep. 11, 1978, abandoned, which is a continuation of Ser. No. 815,616, Jul. 13, 1977, abandoned. This application December 28, 1979, Ser. No. 107,213
Int. Cl.³ B01D *25/14*
U.S. Cl. 210—225 **2 Claims**



1. An improved filter apparatus for separating liquid from a liquid-solid mixture to form filter cake including a frame, a stationary press head mounted at one end of the frame, a follower mounted on the frame for reciprocatable movement toward and away from the press head, a plurality of filter plates mounted for movement on said frame between the stationary press head and the follower, a carriage mounted for reciprocatable movement on the frame to selectively and sequentially couple to and uncouple from each of the filter plates beginning with the filter plate nearest the follower, a closing cylinder connected to the follower to reciprocate the follower between an open position spaced from the stationary press head and a closed position that is closer to the press head to hold the filter plates in abutting relation whereby filter cake can be formed in chambers between adjacent filter plates, and means operatively connected to said carriage for shifting a selected filter plate in an opening direction away from an adjacent filter so that the filter cake formed in the chamber between the shifted filter plate and the adjacent filter plate may be dumped therefrom and for thereafter shifting the carriage in a return direction to cause the carriage to engage another filter plate to be shifted, wherein the improvement comprises: said shifting means including drive chains connected to said carriage; a reversable hydraulic motor that is operatively connected to the chains; a hydraulic pump; a directional control valve coupled in fluid-flow communication between the pump and the motor for selectively causing the motor to drive the carriage in said opening and return directions; pressure-sensitive means responsive to the fluid pressure between the pump and the hydraulic motor for automatically reversing the hydraulic motor when the carriage shifts a filter plate to the end of its travel in said opening direction and to subsequently reverse the motor when the carriage engages the next filter plate to be shifted at the end of its travel in said return direction; an adjustable flow regulator valve installed in fluid-flow communication between the pump and the motor for regulating the speed at which the carriage is shifted in said opening direction, and another adjustable flow regulator valve installed in fluid-flow communication between the pump and motor for regulating the rate of speed at which said carriage means is moved in said return direction, said flow regulator valves being set to cause the carriage to be moved more rapidly in the return direction than it is shifted in the opening direction.

4,364,828
FILTER APPARATUS
Raymond E. Ward, 1905 N. Val Vista, Mesa, Ariz. 85205
Filed 1981, Ser. No. 223,858
Int. Cl.³ B01D *27/08*
U.S. Cl. 210—232 **2 Claims**



1. A filter apparatus, comprising:

a multiplicity of particulate filtering elements:

case means having first and second case members defining a cavity for enclosing said filtering elements;

said case means defining a fluid inlet and a fluid outlet;

filling means for permitting said filtering elements to be placed within said case means between said inlet and said outlet;

said filling means including said first and second case members respectively provided with rotatably communicating overlapping portions;

said filling means also including said first and second case members respectively having first and second apertures through said overlapping portions;

said filling means having first and second baffle members respectively in communication with the internal circumferential surfaces of said first and second case members so that placement of said filtering elements within said cavity

biases said baffle members against said case members to define inlet and outlet chambers respectively open to said inlet and outlet,

said filling means further including said first and second apertures having alignability so that said case members can be loaded with said filtering elements through said first and second apertures when aligned and further so that said filtering elements can be sealed within said case members by rotating said first and second case members relative to one another to misalign said first and second apertures; and

sealing means for permanently sealing said first and second case members together with said first and second apertures in a mis-aligned condition so that said filtering elements can be sealed within said cavity.

4,364,829

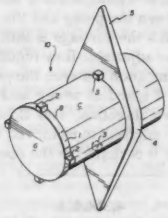
OIL FILTER WITH TURN ATTACHMENT

Donald A. Atkins, 114 Morningside Dr., Nolanville, Tex. 76559, and Marilyn M. Atkins, Colorado Springs, Colo.

Filed July 1, 1981, Ser. No. 279,665

Int. Cl.³ B01D *27/08*

U.S. Cl. 210—238 **9 Claims**



1. A device for facilitating changing of oil filters on engines or the like comprising in combination:

an oil filter canister of cylindrical configuration having an outer annular surface with at least one interlocking means fixed thereon,

an interengaging means operatively associated with said interlocking means including at least one radially extending lever bar and permanently carried on said canister annular surface whereby when said interengaging means coacts with said interlocking means, said oil filter canister can be rotated about a longitudinal axis thereof by said lever bar.

4,364,830

FILTER BOTTOM

Robert L. Roberts, Boothwyn, Pa., assignor to Roberts Filter Manufacturing Company, Darby, Pa.

Filed September 3, 1981, Ser. No. 299,105

Int. Cl.³ B01D *23/18*

U.S. Cl. 210—268 **10 Claims**

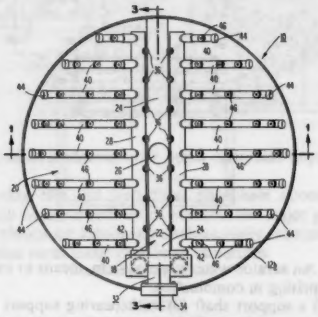
1. A bottom for a filter of the type that includes granular material for removing impurities from liquids, characterized in that said bottom includes:

a fill material having an upper surface adapted to support said granular material, said upper surface including an elongate trough defined, in part, by elongate sidewall sections having a steeper slope than adjacent lateral wall sections of said upper surface, said lateral wall sections sloping in an upward direction from the trough toward sidewalls of the filter;

egress passage means interrupting an elongate bottom wall section of the trough, said egress passage means being adapted for use in removing granular material from the filter;

an elongate header embedded in a sidewall section defining a part of the elongate trough, said header including a central passageway and a plurality of openings extending through an outer wall thereof for communicating with said central passageway, said openings being spaced along the elongate extent of the header for receiving filtered liquid, said header communicating with an outlet for said filtered liquid;

a plurality of conduits extending laterally from the header at spaced locations along the elongate extent of said header, said conduits having central passageways communicating with the central passageway through the header, said conduits having a plurality of openings through outer walls thereof for receiving filtered liquid, said openings extending



along the elongate extent of said conduits and communicating with the central passageways therethrough, said conduits sloping upwardly from the header toward sidewalls of the filter and being embedded in the sloping lateral wall sections of the bottom; and

liquid-pervious screen means associated with the openings that extend through the outer walls of the header and lateral conduits for permitting filtered liquid to pass into said header and conduits while impeding the flow of granular material.

4,364,831

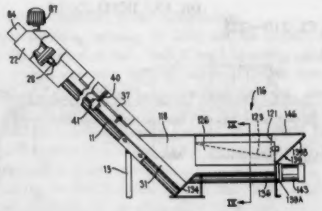
CHIP CONVEYOR

Donald L. Burns, Oshtemo Township, Kalamazoo County; John M. Harbour, and James J. Lister, both of Kalamazoo, all of Mich., assignors to Kalamazoo Conveyor Company, Kalamazoo, Mich.

Filed December 15, 1980, Ser. No. 216,346

Int. Cl.³ B65G *33/14*; B01D *21/24*

U.S. Cl. 210—298 **11 Claims**



1. An apparatus for conveying and separating liquids and solids deposited therein, comprising:

a pair of inclined, upwardly opening, adjacent and elongated trough means extending parallel to each other;

an inclined, elongated helical flight disposed in each said trough means for rotation about its longitudinal axis;

drive means for effecting rotation of said helical flights;

tank means secured to said trough means and receiving the

lower ends of said helical flights, said tank means having spaced and upright first wall means;

a pair of second wall means disposed within said receiving tank means between and spaced from said first wall means for receiving said liquids and solids therebetween, said second wall means extending above the top of at least a portion of each said first wall means; and

elongated edge means defining said portion of the top of each said first wall means, said edge means being adjustable about a horizontal axis transverse of said first wall means;

each said first wall means comprising an upright side wall having a recessed portion in the top edge thereof;

each said elongated edge means comprising a plate having a linear top edge and disposed against a side wall substantially parallel thereto to partially cover said recessed portion;

means pivotally supporting said plate on said side wall for effecting said adjustment of said top edge; and

means for releasably securing said plate against pivotal movement and in a position in which said top edge of said plate is substantially horizontal;

whereby said solids introduced between said second wall means are conveyed by said rotating flights to the upper ends of said trough means and said liquid introduced between said second wall means passes under said second wall means and overflows the tops of said edge means.

4,364,832

SEPARATING MEMBER IN A SEPARATING TUBE FOR CENTRIFUGAL SEPARATION

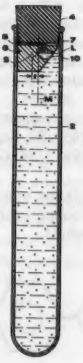
Uwe W. Ballies, Jaegersberg 7 - 9, 2300 Kiel, Fed. Rep. of Germany

Filed 1982, Ser. No. 340,044

Claims priority, application Fed. Rep. of Germany, 1981, 3101733

Int. Cl.³ B01D *21/26*

U.S. Cl. 210—518 **12 Claims**



1. Separating member in a separating tube for the centrifugal separation of a liquid containing at least two components, which has a top surface and a bottom surface and is made from inelastic material, particularly inelastic plastic material, whose specific gravity is between that of the components to be separated and which in the rest state seals the cross-section of the separating tube, characterized in that the centre of gravity (S) of the separating member (6–6‴) is arranged eccentrically with respect to its central axis (M) and that due to its shape, during centrifuging, the separating member (6–6‴) can only be tilted in the separating tube (2) in such a way that a gap (f) is formed between the largest circumference (D_1) of the separating member (6–6‴) and the inner wall of the separating tube (2).

4,364,833

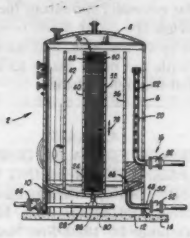
APPARATUS FOR REMOVING SUBSTANCES FROM A MIXTURE

Cory L. Loegering, Lake Charles, La., assignor to Conoco Inc., Ponca City, Okla.

Filed March 11, 1981, Ser. No. 242,802

Int. Cl.³ B01D *21/08*

U.S. Cl. 210—521 **10 Claims**



1. An apparatus for separating a plurality of liquid, solid and gaseous components of a fluid mixture comprising:

a separator vessel;

inlet means for introducing said fluid mixture into said vessel;

outlet means for discharging said components of said fluid mixture from said vessel;

a fluid flow path in said vessel between said inlet and outlet means;

a first plurality of plate members in said flow path within said vessel, each of said first plate members defining a plane which is parallel to the plane of an adjacent one of said first plate members and spaced therefrom, said planes of said first plurality of plate members being parallel to said flow path, and

a second plurality of plate members in said flow path within said vessel, each of said second plate members defining a plane which is parallel to the plane of an adjacent one of said second plurality of plate members and spaced therefrom, said planes of said second plurality of plate members being parallel to said flow path and at right angles to said planes of said first plurality of plate members.

4,364,834

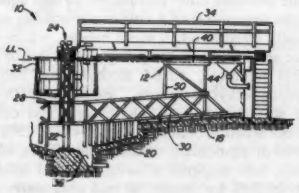
SEDIMENTATION APPARATUS HAVING AN IMPROVED SKIMMING MECHANISM

Walter G. Wawro, Longmont, Colo., assignor to Envirotech Corporation, Menlo Park, Calif.

Filed November 10, 1981, Ser. No. 320,141

Int. Cl.³ B01D *21/18*

U.S. Cl. 210—525 **3 Claims**



1. An improved rotary sedimentation apparatus of the type including a cylindrical tank having a bottom wall, at least one rake arm structure adapted to push thickened mixture inwardly toward the center of the bottom wall, a drive and lift unit that is located at the center of the tank and that is connected to the rake arm for rotating the rake arm about the center of the tank and for selectively raising the rake arm, wherein the improvement comprises: an inner skimmer blade, an outer skimmer

blade, a support structure vertically affixed to the rake arm, means for slideably mounting the inner blade in a radial orientation relative to the tank and for vertically sliding movement upon the support structure, said drive and lift unit including a portion which is adapted to rotate with the rake arm but which does not change its elevation when the rake arm is lifted or lowered, a cable connected between said inner blade and said last mentioned part, said cable having a length adapted to suspend the inner blade at the surface level of the liquid in the clarifier, means for pivotally mounting the outer blade to the inner blade to permit the outer blade to swing about an axis that extends radially of the tank, and scum collecting means that cooperates with the outer blade to collect scum urged forwardly ahead of the outer blade.

4,364,835

SULFITE DESTRUCTION OF DIRECT ACTING MUTAGENS IN DRINKING WATER

Albert M. Cheh, Silver Spring, Md., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed October 24, 1980, Ser. No. 200,376

Int. Cl.³ C02F *1/70, 1/76*

U.S. Cl. 210—752 **17 Claims**

1. The method of reducing the activity of non-volatile mutagens in chlorinated water, which method comprises:

(A) determining the residual chlorine in the water,

(B) adding sulfite to the water in amount in excess of that sufficient to eliminate the residual chlorine,

(C) uniformly and thoroughly admixing said sulfite and water to dechlorinate the water and at least partially destroy the mutagens therein.

4,364,836

PROCESS FOR THE REMOVAL OF ALKALI METAL HALIDES FROM CELLULOSE ETHERS SOLUBLE IN COLD WATER AND USE OF THE PURIFIED PRODUCTS IN WASHING AND CLEANSING AGENT COMPOSITIONS

Horst Zíche, Dusseldorf, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Division of Ser. No. 126,901, Mar. 3, 1980, Pat. No. 4,296,235. This application September 8, 1981, Ser. No. 300,024

Claims priority, application Fed. Rep. of Germany, March 29, 1979, 2912486

Int. Cl.³ C11D *3/22, 3/37, 11/02;* C08B *11/20*

U.S. Cl. 252—135 **3 Claims**

1. In the process of preparing a powdered washing agent comprising surface-active agents, builders, soil suspension agents, and cold-water-soluble cellulose ethers, comprising the steps of preparing an aqueous slurry of the ingredients, spray-drying the slurry at temperatures below 100° C. and recovering a powdered washing agent, the improvement comprising adding the cellulose ether component to said aqueous slurry as an aqueous suspension of a cold-water-soluble cellulose ether substantially freed of alkali metal halides, where said cellulose ethers are selected from the group consisting of methyl cellulose, ethyl cellulose, mixed methyl/ethyl cellulose, mixed ethyl/hydroxyethyl cellulose, mixed ethyl/hydroxypropyl cellulose and mixed ethyl/dihydroxypropyl cellulose, in an aqueous salt solution containing from 4% to 15% by weight of alkali metal or ammonium sulfates, phosphates, silicates and/or carbonates, said suspension having a total solids content of from 8% to 20% by weight, as said cold-water-soluble cellulose ether, wherein said aqueous suspension of a cold-water-soluble cellulose ether in an aqueous salt solution is prepared by a process consisting essentially of suspending a cold-water-soluble cellulose ether crude reaction product containing 25% by weight or more of alkali metal halides, based on the dry weight, where said cellulose ethers are selected from the group consisting of methyl cellulose, ethyl cellulose, mixed methyl-/ethyl cellulose, mixed ethyl/hydroxyethyl cellulose, mixed ethyl/hydroxypropyl cellulose and mixed ethyl/dihydroxypropyl cellulose, in an aqueous solution containing from 4% to about 25% by weight of one or more water-soluble salts selected from the group consisting of alkali metal or ammonium sulfates, phosphates, silicates and/or carbonates, with agitation at a temperature of from 10° C. to 50° C., separating the purified cellulose ether solids and repeating the suspending and separating steps zero, one or more times, then suspending said purified cellulose ether solids in an aqueous solution containing from 4% to 15% by weight of said one or more water-soluble salts in an amount sufficient to give a suspension having a total solids content of from 8% to 20% by weight.

3. The process of claim 1 wherein said aqueous salts are selected from the group consisting of alkali metal sulfates, alkali metal phosphates, alkali metal silicates and alkali metal carbonates.

4,364,837

SHAMPOO COMPOSITIONS COMPRISING SACCHARIDES

Morton Pader, Teaneck, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed September 8, 1981, Ser. No. 300,078

Int. Cl.³ C11D *3/22*

U.S. Cl. 252—173 **55 Claims**

1. A freely pourable, substantially homogeneous shampoo composition comprising:

(a) about 15 to about 70% by weight of a water-miscible saccharide;

(b) about 20 to about 75% by weight water;

(c) about 0.1 to about 30% by weight of at least one nonionic or cationic hair grooming agent; and

(d) about 3 to about 60% by weight of an anionic or amphoteric detergent,

the shampoo composition having a viscosity of about 400 to about 6,000 cps at 25° C.

4,364,838

LIQUID CRYSTAL MIXTURES

Arthur Boller, Binningen; Alfred Germann, Basel; Martin Schadt, Seltisberg, and Alois Villiger, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 131,320, Mar. 18, 1980, abandoned. This application November 10, 1980, Ser. No. 205,181

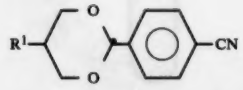
Claims priority, application Switzerland, November 14, 1979, 10154/79; June 17, 1980, 4651/80; September 9, 1980, 6767/80

Int. Cl.³ C09K *3/34;* G02F *1/13*

U.S. Cl. 252—299.61 **37 Claims**

1. A liquid crystalline mixture comprising:

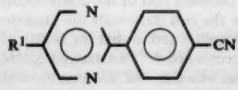
(a) about 10 to about 75 mol percent of at least one trans-phenyl-dioxane of the formula:



I

wherein R^1 is straight chain alkyl of 3 to 7 carbon atoms;

(b) about 5 to about 30 mole percent of at least one phenyl-pyrimidine of the formula:

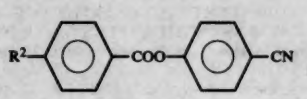


VII

wherein R^1 is as above; and

(c) about 2 to about 20 mol percent of at least one phenylbenzoate of the formula:

VIII



wherein R^2 is straight chain alkyl of 2 to 7 carbon atoms.

4,364,839

CATALYST COMPRISING CHROMIUM ON SILICA/PHOSPHATE SUPPORT

Max P. McDaniel, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed December 31, 1980, Ser. No. 221,746
Int. Cl.³ C08F 4/02, 4/62
U.S. Cl. 252—430 35 Claims

1. A catalyst system comprising:

(a) a catalyst comprising a chromium component on a silica/phosphate support, said phosphate being selected from at least one of aluminum phosphate and boron phosphate; and

(b) a cocatalyst selected from organoaluminum compounds and organoboron compounds.

4,364,840

PHOSPHATED SILICA-CHROMIUM CATALYST WITH BORON-CONTAINING COCATALYST

Max P. McDaniel, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed December 31, 1980, Ser. No. 221,754
Int. Cl.³ C08F 4/02, 4/62
U.S. Cl. 252—430 24 Claims

1. A method of making a catalyst system comprising:

(a) treating a silica-containing support with a phosphating agent and activating said thus treated catalyst in an oxidizing atmosphere at an elevated temperature, said support either having a chromium compound coprecipitated therewith or having a chromium compound added thereto prior to said activating in said oxidizing atmosphere, said phosphating agent being utilized in an amount sufficient to give 0.1 to 20 mole percent of said phosphating agent based on the moles of silica in said silica-containing support; and

(b) combining a cocatalyst selected from trihydrocarbyl boron compounds, boron alkoxides and halogenated alkyl boron compounds with said catalyst.

4,364,841

PHOSPHATE CONTAINING SUPPORT WITH ZEROVALENT CHROMIUM

Max P. McDaniel, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed December 31, 1980, Ser. No. 221,759
Int. Cl.³ C08F 4/02, 4/62
U.S. Cl. 252—430 29 Claims

1. A catalyst system comprising:

(a) a catalyst comprising a zerovalent chromium compound on a phosphate-containing support; and

(b) cocatalyst selected from organoboron and organoaluminum compounds.

4,364,842

PHOSPHATE SUPPORTED CHROMIUM CATALYST

Max P. McDaniel, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed December 31, 1980, Ser. No. 221,877
Int. Cl.³ B01J 31/02
U.S. Cl. 252—430 43 Claims

1. A catalyst system comprising

(a) a catalyst comprising a chromium compound on a predominantly amorphous aluminum phosphate containing xerogel base; and

(b) a cocatalyst comprising a boron compound selected from trihydrocarbyl boron compounds, boron alkoxides, and mixtures thereof.

4,364,843

CATALYTIC COMPOSITE, METHOD OF MANUFACTURE, AND PROCESS FOR USE

David H. J. Carlson, Park Ridge, Ill., assignor to UOP Inc., Des Plains, Ill.

Continuation-in-part of Ser. No. 98,009, Nov. 28, 1979, abandoned, and a continuation-in-part of Ser. No. 95,748, Nov. 19, 1979, abandoned. This application April 20, 1981, Ser. No. 255,409
Int. Cl.³ B01J 31/22
U.S. Cl. 252—430 14 Claims

1. A catalytic composite comprising a catalytically effective amount of a metal phthalocyanine and an alkali metal hydroxide disposed on an adsorptive support, said alkali metal hydroxide comprising at least about 10 wt. % of said catalytic composite, said catalytic composite being prepared by a method which comprises:

(a) preparing an admixture of an adsorptive support, a metal phthalocyanine, an alkali metal hydroxide, and an alcohol having fewer than six carbon atoms, said admixture also containing from 0 wt. % to about 25 wt. % water based on the weight of said alcohol; and

(b) drying said admixture at a temperature of less than about 30° C. to form a catalytic composite.

4,364,844

CATALYST FOR PRODUCTION OF UNSATURATED CARBOXYLIC ACID, PREPARATION THEREOF AND PRODUCTION OF UNSATURATED CARBOXYLIC ACID

Sumio Umemura; Kyoji Ohdan; Fumihiko Sakai; Kenichi Suzuki; Yasuo Bando; Toshihiko Hogami, and Masataka Fuginaga, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed September 4, 1980, Ser. No. 184,178
Claims priority, application Japan, September 4, 1979, 54-112421
Int. Cl.³ B01J 27/18, 21/00
U.S. Cl. 252—435 14 Claims

1. In a catalyst containing molybdenum, phosphorus, vanadium and the alkali metals supported on a carrier which is used for the production of an unsaturated carboxylic acid by the catalytic vapor phase oxidation of an unsaturated aldehyde, the catalyst being prepared by admixing a composition containing the constituent elements of the catalyst with the carrier, whereby the composition is supported on pores of the carrier, followed by calcination; the improvement wherein the catalyst is in the form of particulate particles and wherein the carrier is at least one heat-resistant inorganic substance having a particle diameter of 2 through 10 mm, an apparent porosity of 35 through 60%, a water absorption of 20 through 50%, an average pore diameter of not less than 40 microns, a specific surface area of not more than 2 m^2/g and a bulk specific gravity of 1.5 through 2.0.

4. A catalyst as claimed in claim 1, wherein said heat-resistant inorganic substance is at least one substance selected from

the group consisting of alumina, silica-alumina and silicon carbide.

4,364,845

CONCENTRATED AQUEOUS SOLUTIONS OF SULFO GROUP-CONTAINING FLUORESCENT BRIGHTENERS WHICH ARE STABLE ON STORAGE

Werner Fringeli, Laufen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

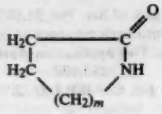
Filed July 6, 1979, Ser. No. 55,417

Claims priority, application Switzerland, July 17, 1978, 7706/78

Int. Cl.³ C09K 11/06

U.S. Cl. 252—301.22 9 Claims

1. A concentrated aqueous solution, which is stable on storage, of a sulfo group-containing fluorescent brightener, which contains a stilbene fluorescent brightener substituted by sulfo groups and a lactam of the formula



in which m is 0 or an integer between 1 and 9.

4,364,846

PROCESS FOR PREPARING A HAZE-FREE DETERGENT AND CORROSION INHIBITING ADDITIVE FOR MOTOR FUELS

Benjamin J. Kaufman, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

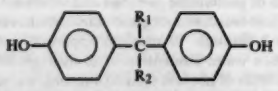
Filed March 30, 1981, Ser. No. 248,169

Int. Cl.³ C23F 11/12, 11/14

U.S. Cl. 252—392 3 Claims

1. In a method for preparing a primary aliphatic hydrocarbon alkylene substituted asparagine in which one mole of maleic anhydride is reacted with approximately two moles of a N-alkyl-propane diamine composition represented by the formula:

in which the typical chain distribution of R is 0.5% dodecyl (C-12); 3.5% tetradecyl (C-14); 0.5% pentadecyl (C-15); 4.0% hexadecyl (C-16); 1.0% heptadecyl (C-17); 14.0% octadecyl (C-18); 1.5% tetradecenyl (C-14); 5.0% hexadecenyl (C-16); 67.0% (C-18): 3.0% octadecadienyl (C-18); and wherein said primary aliphatic hydrocarbon alkylene substituted asparagine product is characterized by being hazy or becoming hazy on standing, the improvement which comprises conducting said reaction between said maleic anhydride and said N-alkylpropane diamine composition in the presence of from about 0.5 to 5 weight percent based on the weight of N-alkyl propane diamine mixture of a phenolic compound represented by the formula:



in which R_1 and R_2 each represent hydrogen or an alkyl radical having from 1 to 9 carbon atoms and the total number of carbon atoms in R_1 and R_2 does not exceed 9.

4,364,847

PASSIVATION OF METAL CONTAMINANTS ON CRACKING CATALYST WITH A LITHIUM COMPOUND

Hosheng Tu, Lake Forest, Calif., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 124,507, Feb. 25, 1980, abandoned. This application May 26, 1981, Ser. No. 266,764

Int. Cl.³ B01J 29/38, 21/20; C10G 11/18, 11/05

U.S. Cl. 252—412 11 Claims

1. A process for passivating a metal on fluidized cracking catalyst which has been contaminated with said metal due to the use of said catalyst in a fluidized cracking system and wherein said catalyst is cycled between a cracking zone, in which said catalyst is contacted at an elevated temperature with a hydrocarbon feedstock containing said metal contaminant which deposits on said catalyst, and a regeneration zone, in which carbon is oxidized and thereby removed from said catalyst, which process comprises contacting at least a portion of said catalyst at passivation reaction conditions with a lithium compound in an amount to deposit on the catalyst about 0.5 wt % to 1.25 wt % lithium on an elemental metal basis, to effect a passivation reaction between said metal and said lithium and the passivation of said metal contaminant so as to increase yield of C_5+ and reduce the yield of hydrogen in said fluidized cracking system.

4. A process in accordance with claim 1 wherein said contacting of said catalyst with said lithium compound occurs in a passivation zone with said catalyst being cycled from said regeneration zone to said passivation zone and from said passivation zone to said cracking zone.

9. A process in accordance with claim 1 wherein said lithium compound is oil soluble and is added to the feedstock of said cracking system thereby effecting contact of said catalyst with said lithium compound and passivation of said metal contaminants occurs in said cracking zone.

4,364,848

PASSIVATION OF METAL CONTAMINANTS ON CRACKING CATALYST

Carmen Castillo, Lyons, and John C. Hayes, Palatine, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 132,602, Mar. 21, 1980, abandoned. This application November 21, 1980, Ser. No. 209,073

The portion of the term of this patent subsequent to November 30, 1999, has been disclaimed.

Int. Cl.³ B01J 29/38, 21/20; C10G 11/18, 11/05

U.S. Cl. 252—417 8 Claims

1. A process for passivating a metal on fluidized cracking catalyst which has been contaminated with said metal due to the use of said catalyst in a fluidized cracking system, and wherein said catalyst is cycled between a cracking zone, in which said catalyst is contacted at an elevated temperature with a hydrocarbon feedstock containing said metal which deposits on said catalyst, and a regeneration zone, in which carbon is oxidized and thereby removed from said catalyst, said metal being included in the group comprising nickel, cobalt or iron, the total amount of all metals of said group contained in said feedstock comprising at least one part per million by weight of said feedstock, which process comprises contacting said catalyst, prior to the cycling of said catalyst to said cracking zone, with a mixture of gases comprising (1) hydrogen (2) hydrocarbons selected from the group consisting of hydrocarbons containing one, two and three carbon atoms at passivation reaction conditions selected so as to effect reduction of substantially all said metal to its metallic state and deactivation of said metal in its metallic state by carbonization.

4. A process in accordance with claim 1 wherein said contacting of said catalyst with said gaseous mixture occurs in a passivation zone comprising a vessel in the dip leg line between the regeneration vessel and the reactor riser.

8. A process for passivating a metal on fluidized cracking catalyst which has been contaminated with said metal due to

the use of said catalyst in a fluidized cracking system, and wherein said catalyst is cycled between a cracking zone, in which said catalyst is contacted at an elevated temperature with a hydrocarbon feedstock containing said metal which deposits on said catalyst, and a regeneration zone, in which carbon is oxidized and thereby removed from said catalyst, said metal being included in the group comprising nickel, cobalt or iron, the total amount of all metals of said group contained in said feedstock comprising at least one part per million by weight of said feedstock, which process comprises contacting said catalyst, prior to the cycling of said catalyst to said cracking zone, with a gas comprising hydrogen at passivation conditions prior to contact with a hydrogen gas to effect at least partial reduction of said metal and contacting said partially reduced catalyst with a gas comprising hydrocarbons selected from the group consisting of hydrocarbons containing one, two or three carbon atoms at passivation reaction conditions selected so as to effect reduction of substantially all said metal to its metallic state and deactivation of said metal in its metallic state by carbonization.

4,364,849

FLUID CATALYST REGENERATION PROCESS AND APPARATUS

Anthony G. Vickers, and David A. Lomas, both of Arlington Heights, Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed September 14, 1981, Ser. No. 301,923

Int. Cl.³ B01J *29/38, 21/20;* **C10G** *11/18*

U.S. Cl. 252—417 **8 Claims**

1. A process for regenerating a coke contaminated fluid catalyst, said process including the steps of:

(a) introducing oxygen containing regeneration gas, coke contaminated fluid catalyst, and cooled recycled regenerated catalyst from a source hereinafter described, into a lower locus of combustion zone maintained at a temperature sufficient for coke oxidation and therein oxidizing coke to produce hot regenerated catalyst and hot flue gas;

(b) transporting said hot flue gas and said hot regenerated catalyst from an upper locus of said combustion zone into a regenerated catalyst disengaging zone, wherein said hot regenerated catalyst is separated from said flue gas and collected in a first collection zone at a lower locus of said disengaging zone as a fluidized bed the surface of which is at a first level;

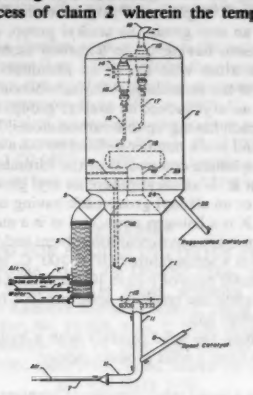
(c) transporting a portion of said hot regenerated catalyst from said first collection zone by means of downward gravity flow to the lower locus of a cooling zone separate from and below said disengaging zone wherein said cooling zone heat is withdrawn from said hot regenerated catalyst by indirect heat exchange with a cooling fluid enclosed in a heat exchange means inserted into said cooling zone to produce cool regenerated catalyst, said catalyst being maintained in said cooling zone as a dense phase fluidized bed by passing a fluidizing gas upwardly through such bed;

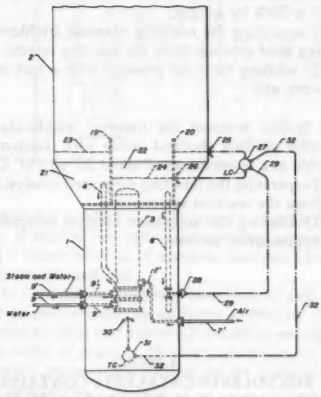
(d) withdrawing said cool regenerated catalyst from said cooling zone by means of said catalyst overflowing from said cooling zone into a second collection zone at a lower locus of said disengaging zone, said catalyst being collected in said second collection zone as a dense phase fluidized bed the surface of which is at a second level, said first level being of sufficient height above said second level to provide the driving force required to circulate said catalyst through said cooling zone and;

(e) transporting said catalyst by means of downward gravity flow from said second collection zone to said lower locus of said combustion zone as said cooled recycled regenerated catalyst.

2. The process of claim 1 wherein the quantity of catalyst circulated through said cooling zone and thereby the quantity of heat removed from said catalyst is controllably maintained by controlling the height of said second level by controlling the quantity of catalyst transported from said second collection zone to said lower locus of said combustion zone, the height of said first level being held constant.

3. The process of claim 2 wherein the temperature at a





selected locus of said combustion zone is controllably maintained by controlling the quantity of catalyst circulated through said cooling zone in response to said temperature at said selected locus.

4,364,850

Patent Not Issued For This Number

4,364,851

PROCESS FOR PRODUCING OLEFIN POLYMERS

Akinobu Shiga; Yoshiharu Fukui; Toshio Sasaki; Masahisa Okawa; Hideaki Matsu-Ura, all of Niihama, and Yasuharu Yamada, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed 1980, Ser. No. 113,668

Claims priority, application Japan, 1979, 54-10555

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **12 Claims**

1. A supported catalyst component prepared by a process comprising

(1) forming a solid product carrier in an inert atmosphere by
(I) reacting (a) an organomagnesium compound of the formulae R^6MgX or $R^6{}_2Mg$ wherein R^6 is an alkyl group, an aryl group, an aralkyl group, or an alkenyl group each having up to 8 carbon atoms and X is a halogen atom with (b) (i) an aluminum halide compound of the formula R_nAlX_{3-n} wherein R is an alkyl group, an aryl group, an aralkyl group, or an alkenyl group each having up to 8 carbon atoms, X is a halogen atom, and n is a number defined by $0 \leqq n < 3$ and/or (ii) a silicon halide compound of the formula $R^1{}_mSiX_{4-m}$ wherein R^1 is an alkyl group, an aryl group, an aralkyl group, or an alkenyl group each having up to 8 carbon atoms, X is a halogen atom, and m is a number defined by $0 \leqq m < 4$ in a hydrocarbon solvent and/or an etherial solvent at a temperature of 0° to 100° C., in a former-to-latter molar ratio of 1:10 to 10:1 to form a solid product,
(II) separating the resulting solid product from the reaction system and
(III) washing the solid product with a hydrocarbon solvent to form a solid product carrier,

(2)
(I) heating a liquid ether complex of titanium trichloride in a hydrocarbon solvent at a temperature of about 25° to about 150° C. in the presence of said carrier to deposit titanium trichloride on the carrier, the amount of trivalent titanium atoms contained in the solid product being 3 to 20% by weight,
(II) separating the resulting titanium trichloride-containing solid product form the reaction system, and
(III) washing the solid product with a hydrocarbon solvent, and

(3)
(I) further reacting the titanium trichloride-containing solid product obtained above with titanium tetrachloride at a temperature of about 20° to 150° C.,
(II) separating the resulting supported catalyst component from the reaction system, and
(III) washing the supported catalyst component with a hydrocarbon solvent.

4,364,852

POLYOLEFIN CATALYSTS CONTAINING HETEROCYCLIC CARBOXYLIC ACID ESTERS

Rolf F. Foerster, Morris, Ill., assignor to Northern Petrochemical Company, Omaha, Nebr.

Filed June 4, 1981, Ser. No. 270,258
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **3 Claims**

1. A catalyst system for the preparation of homopolymers and copolymers of alpha monoolefins comprising
(1) a titanium halide of the formula

$$TiCl_3 \cdot m\ AlCl_3$$

where M is a number from 0 to 0.5,
(2) an ester of a carboxylic acid having an oxygen, nitrogen, or sulfur-containing heterocyclic structure, wherein the ester group is attached to a carbon atom in the heterocyclic structure, and
(3) an aluminum-alkyl of the formula

$$X-\underset{\displaystyle Z}{\overset{\displaystyle |}{Al}}-Y$$

where X and Y are each alkyl of not more than 8 carbon atoms, and Z is chlorine or alkyl of not more than 8 carbon atoms, with the proviso that (I) the molar ratio of ester (2): titanium halide (1) is from about 0.005 to about 5, and (II) the molar ratio of titanium halide (1): aluminum-alkyl (3) is from 1:1 to 1:20.

4,364,853

CATALYST FOR POLYMERIZING OLEFINS

Robert I. Mink, and Ronald A. Epstein, both of Yonkers, N.Y., assignors to Stauffer Chemical Company, Wesport, Conn.

Filed September 18, 1981, Ser. No. 303,329
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **30 Claims**

1. A catalytic system for polymerizing olefins comprising:
(a) a component containing an organoaluminum compound, and
(b) a component containing a titanium halide obtained by a process comprising:
(i) intimately contacting a magnesium compound containing halogen or a manganese compound containing halogen with a carboxylic acid to produce an activated product, and
(ii) reacting the activated product with a titanium halide compound.

4,364,854

ACID GELLING ALUMINUM PHOSPHATE FROM CONCENTRATED MASS AND CATALYST CONTAINING SAME

Max P. McDaniel, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed December 31, 1980, Ser. No. 221,747
Int. Cl.³ B01J *27/18*; C01B *15/16*
U.S. Cl. 252—437 **26 Claims**

1. A method for producing aluminum orthophosphate comprising combining an aluminum salt with a source of orthophosphate ions in a concentrated mass, combining said concentrated mass with a neutralizing agent, said neutralizing agent being used in an amount insufficient to cause immediate gellation, and aging until gellation occurs to form a hydrogel.

4,364,855

PRODUCTION OF ALUMINUM PHOSPHATE FROM CONCENTRATED MASS

Max P. McDaniel, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed December 31, 1980, Ser. No. 221,753
Int. Cl.³ B01J *27/18*; C01B *15/16, 25/16*
U.S. Cl. 252—437 **20 Claims**

1. A method for producing aluminum orthophosphate comprising combining an aluminum salt with a source of added orthophosphate ions in a concentrated mass containing 40 weight percent or less water based on the weight of said aluminum salt, combining the resulting composition with a base to form aluminum phosphate hydrogel still in a concentrated mass containing 40 weight percent or less water based on the weight of said aluminum salt, and removing water from said hydrogel to produce a xerogel.

15. An aluminum orthophosphate made in accordance with claim 1.

19. An aluminum orthophosphate supported catalyst produced by combining an aluminum salt with a source of phosphate ions in a concentrated mass containing 40 weight percent

or less water based on the weight of said aluminum salt, combining the resulting composition with a base to form aluminum phosphate hydrogel still in a concentrated mass containing 40 weight percent or less water based on the weight of said aluminum salt, and removing water to form a xerogel and activating at an elevated temperature, the thus activated aluminum phosphate containing in addition 0.001 to 10 weight percent vanadium based on the weight of the xerogel.

20. A catalyst produced by combining an aluminum salt with a source of orthophosphate ions in a concentrated mass containing 40 weight percent or less water based on the weight of said aluminum salt, combining the resulting composition with a base to form aluminum phosphate hydrogel still in a concentrated mass containing 40 weight percent or less water based on the weight of said aluminum salt, and removing water to form a xerogel, activating at an elevated temperature and introducing a zerovalent chromium compound under anhydrous conditions.

4,364,856

MIXED METAL PHOSPHORUS OXIDE COATED CATALYSTS FOR THE OXIDATIVE DEHYDROGENATION OF CARBOXYLIC ACIDS

Harry H. I. Teng, Waldwick, N.J., and S. Erik Pedersen, Mentor, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed 1981, Ser. No. 225,572
Int. Cl.³ B01J *27/14, 21/02*
U.S. Cl. 252—437 **19 Claims**

1. A process for the preparation of coated iron phosphorus oxide containing catalysts comprising

(a) partially wetting a carrier with a liquid comprising a solution or colloidal suspension of SiO_2 in water;

(b) contacting the partially wet carrier with a powder of the iron phosphorus oxide catalyst to form a mixture;

(c) agitating said mixture to form the coated catalyst;

(d) drying said coated catalyst;

(e) calcining said coated catalyst.

4,364,857

FIBROUS CLAY MIXTURES

Donald S. Santilli, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed 1981, Ser. No. 224,713
Int. Cl.³ B01J *20/12, 21/16*
U.S. Cl. 252—455 R **21 Claims**

7. A composition of matter comprising codispersed rods of tubular halloysite and fibrous attapulgite.

8. The composition of claim **7** wherein at least 5 weight percent of said composition is attapulgite based on total weight of composition.

12. The composition of claim **8** further comprising at least one metal selected from the transition group of metals.

4,364,858

METHOD OF PRODUCING AN ACTIVATED ALUMINA CLAUS CATALYST

Kenneth P. Goodboy, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed July 21, 1980, Ser. No. 170,638
Int. Cl.³ B01J *21/04*
U.S. Cl. 252—463 **6 Claims**

1. A method of producing an activated alumina catalyst suitable for use in a Claus process and having increased resistance to sulfate poisoning and increased catalytic activity, the method consisting essentially of:

(a) sizing alumina to an average particle size of about 10 microns or less;

(b) then, rapidly activating the sized alumina particles by exposure to relatively high temperatures of greater than 300° C. for less than one minute;

(c) agglomerating the activated alumina in the presence of water;

(d) aging the alumina agglomerates in the presence of water at pH greater than 7 to rehydrate the alumina; and

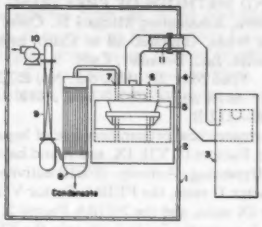
(e) activating the aged alumina by exposure to relatively high temperatures from 350° to 900° C., the activated alumina catalyst produced having sodium oxide present in an amount greater than 0.50 wt. % (1100° C. calcined basis), an LOI (400° to 1100° C.) of less than 6.0 wt. % and a specific surface area greater than 100 m^2/g (BET).

4,364,859

METHOD FOR PRODUCING OXIDE POWDER

Katsuyuki Ohtsuka, Mito; Jin Ohuchi, Tokai, and Yoshiharu Takahashi, Katsuta, all of Japan, assignors to Doryokuro Kakuneanryo Kaihatsu Jigyodan, Tokyo, Japan

Division of Ser. No. 18,320, Mar. 7, 1979, abandoned. This application July 14, 1980, Ser. No. 168,144
Claims priority, application Japan, March 13, 1978, 53-28526
Int. Cl.³ G21F *9/08*
U.S. Cl. 252—643 **9 Claims**



1. A method for producing oxide powder suitable for the manufacture of nuclear fuel pellets, said method comprising:

preparing a nitrate solution of uranium, thorium, plutonium or a mixture thereof; and

applying to a substance consisting essentially of said nitrate solution microwave energy sufficient to directly convert said nitrate solution into a product consisting essentially of oxide powder of uranium, thorium, plutonium or a mixture thereof, respectively, suitable for the manufacture of nuclear fuel pellets.

4,364,860

CATHODICALLY DEPOSITABLE AQUEOUS ELECTRO-DIPPING LACQUER COATING COMPOSITION

Hans-Peter Patzschke, and Armin Gobel, both of Wuppertal, Fed. Rep. of Germany, assignors to Herberts Gesellschaft mit beschrankter Haftung, Wuppertal, Fed. Rep. of Germany

Division of Ser. No. 18,004, Mar. 7, 1979, Pat. No. 4,252,703. This application July 1, 1980, Ser. No. 164,952
Claims priority, application Austria, March 13, 1978, 1766/78
Int. Cl.³ C08L *75/12, 63/02*
U.S. Cl. 525—127 **16 Claims**

1. A cathodically depositable aqueous electrodipping coating composition comprising a binder dilutable in water by protonization with acids, said binder consisting essentially of:

(a) 55 to 95% by weight, based on the total weight of binder being a reaction product of the resin having at least one isocyanate per molecule and a compound selected from the group consisting of polyamines, ketimines containing amino groups, ketimines containing hydroxyl groups and ketimines containing amino and hydroxyl groups and said reaction product having an average molecular weight (Mn) of about 500 to about 10,000, a pk_b value of about 3 to about 7, and containing amino groups selected from the group consisting of primary, secondary and tertiary amino groups to an amine value of about 30 to about 150; and

(b) 45 to 5% by weight, based on the total weight of the binder, of a cross-linking agent being a reaction product of an hydroxy and/or amino alkyl carboxylic acid ester with a polyisocyanate selected from the group consisting of aliphatic, cycloaliphatic and aromatic polyisocyanates and mixtures thereof, said cross-linking agent having an average molecular weight (Mn) of about 500 to about 5000 and containing terminal carboxyl groups, a sufficient number of which are esterified with monoalcohols containing from 1 to 6 carbon atoms to prevent the cross-linking agent from travelling to the anode during electro-deposition and to provide the cross-linking agent with an ester value of about 30 to about 350, the ester groups being substantially stable in a neutral aqueous medium but being reactive in a basic medium at a temperature above 140° C. with amino groups selected from the group consisting of primary and secondary amino groups which are present in the organic synthetic resin binder.

4,364,861

BLOOD-COAGULATION-PROMOTING PRODUCTS AND METHODS OF PREPARING THEM

Gautam Mitra, Kensington; Michael H. Coan, El Cerrito, and Shohachi Wada, Oakland, all of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed May 27, 1980, Ser. No. 153,341

Int. Cl.³ A61K *35/14*; C07G *7/00*; A61K *35/16, 37/02*

U.S. Cl. 260—112 B **6 Claims**

1. A pharmaceutical preparation free of heparin, comprising coagulation Factors II, VII, IX, and X and having Factor VIII Inhibitor Bypassing Activity (FEIB-activity) wherein the FEIBA:Factor II ratio, the FEIBA:Factor VII ratio, the FEIBA:Factor IX ratio, and the FEIBA:Factor X ratio, are about 10:1 to 0.1:1, respectively, and wherein the FEIBA:activity is at least about 60 Units per milliliter and wherein the FEIBA:thrombin ratio is at least about 50:1.

4,364,862

METHOD FOR PREPARING FIBROUS PROTEIN PRODUCTS

Susumu Teranishi; Yoichi Kawasaki, both of Osaka; Tsutomu Katayama, Izumisano, and Hitoshi Taniguchi, Osaka, all of Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

Filed September 15, 1981, Ser. No. 302,352

Claims priority, application Japan, September 22, 1980, 55-132077

Int. Cl.³ A23J *1/14*; C07G *7/00*

U.S. Cl. 260—112 R **2 Claims**

1. A method for the preparation of a fibrous protein product which comprises the step of heating a slurry of protein material under pressure and expelling the slurry through a back-pressure generating orifice while it is fluidized, said orifice having an inner diameter equal to or larger than 2.5 mm and not larger than 10.0 mm over the length of 15 mm or more.

4,364,863

EXTRACTION OF INTERFERON FROM BACTERIA

Paul Leibowitz, Hackensack, and Marvin J. Weinstein, East Brunswick, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 221,135, Dec. 29, 1980, Pat. No. 4,315,852, which is a continuation-in-part of Ser. No. 210,426, Nov. 16, 1980, abandoned. This application 1982, Ser. No. 345,118

Int. Cl.³ A61K *45/02*

U.S. Cl. 260—112 R **8 Claims**

1. A method of extracting fibroblast interferon from interferon-expressing bacterial cells comprising acidifying a suspension of interferon-containing bacterial cells, removing substantially all of the suspension liquid from the cells, preparing a second suspension of the acidified cells, neutralizing said second suspension, separating the interferon containing liquid from the suspended cells, and extracting the interferon from said liquid.

4,364,864

1:2 COBALT AND CHROMIUM COMPLEX UNSYMMETRICAL AZO DYES

Fabio Beffa, Riehen, Switzerland; Gerhard Back, Lörrach, Fed. Rep. of Germany, and Hans U. Schütz, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

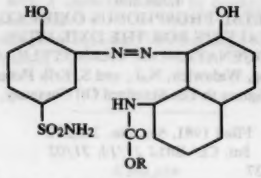
Continuation of Ser. No. 842,853, Oct. 17, 1977, abandoned. This application March 6, 1979, Ser. No. 18,089

Claims priority, application Luxembourg, October 25, 1976, 76061

Int. Cl.³ C09B *45/16, 45/20*; D06P *1/10, 3/24*

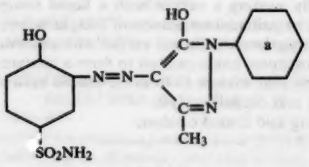
U.S. Cl. 260—145 B **6 Claims**

1. A cobalt or chromium complex dye which contain, bonded to a metal atom, one molecule of each of the azo compounds of the formula



(1)

and



(2)

wherein R is methyl or ethyl and the phenyl ring a is unsubstituted or substituted by 1 to 2 chlorine atoms, or mixtures thereof with the symmetrical 1:2 cobalt or chromium complex dyes of the azo compounds of the formulae (1) and (2).

4,364,865

BICYCLIC UNSATURATED THIA-AZA COMPOUNDS AND 4-ACYLTHIO AZETIDINONE INTERMEDIATES

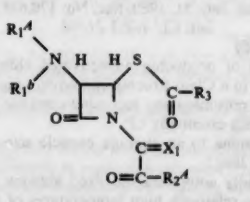
Ivan Ernest, Birsfelden; Jacques Gosteli, Basel, both of Switzerland, and Robert B. Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 961,325, Nov. 16, 1978, abandoned, which is a division of Ser. No. 832,715, Sep. 12, 1977, abandoned, which is a division of Ser. No. 746,979, Dec. 2, 1976, Pat. No. 4,070,477. This application June 11, 1980, Ser. No. 158,430

Int. Cl.³ C07D *205/08*

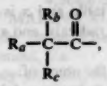
U.S. Cl. 260—239 A **12 Claims**

1. An ylide compound of the formula



(IIA)

wherein R_1^a represents an acyl group of the formula



(IA)

in which (1) R_a is phenyl, 4-hydroxyphenyl or 1,4-cyclohexadienyl, R_b is hydrogen, amino or amino which is protected by halogenated lower alkoxycarbonyl or phenyl lower alkoxycarbonyl which is unsubstituted or mono-substituted by lower alkoxy or nitro and R_c is hydrogen, or in which (2) R_a is phenoxy and R_b and R_c represent hydrogen, $R_1{}^b$ is hydrogen or $R_1{}^d$ and $R_1{}^b$ together represent phthaloyl, $R_2{}^d$ is lower alkoxy, 2-halogeno-lower alkoxy, 2-lower alkenyloxy, diphenylmethoxy which is unsubstituted or disubstituted by lower alkoxy, 4-methoxybenzyloxy, nitrobenzyloxy or pentachlorophenoxy, R_3 is hydrogen, lower alkyl, lower alkoxy-lower alkyl, lower alkanoyloxy-lower alkyl, phenyl which is unsubstituted or monosubstituted by nitro or amino, or benzyl, and X_1 denotes a triphenylphosphoranylidene or a tri-lower alkyl-phosphoranylidene radical.

4,364,866

MAYTANSINOIDS

Mitsuko Asai, Takatsuki; Kazuo Nakahama, Muko, and Motowo Izawa, Amagasaki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

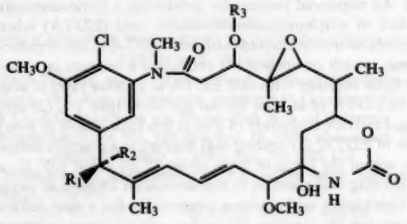
Filed September 17, 1980, Ser. No. 188,238

Claims priority, application Japan, September 21, 1979, 54/122216; November 20, 1979, 54/150908

Int. Cl.³ C07D *498/16, 498/18*

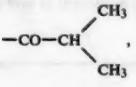
U.S. Cl. 260—239.3 P **20 Claims**

1. A maytansinoid compound of the formula:



wherein

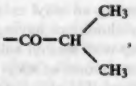
when R_3 designates hydrogen or alkanoyl containing not more than 5 carbon atoms except



R_1 is hydroxyl and R_2 is hydrogen;

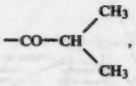
when R_3 designates hydrogen or alkanoyl containing not more than 5 carbon atoms, R_1 is hydrogen and R_2 is hydroxyl;

when R_3 designates hydrogen or alkanoyl of 2 to 5 carbon atoms other than



R_2 is hydrogen and R_1 is formyloxy, alkanoyloxy of 2 to 7 carbon atoms, alkenylcarbonyloxy of 3 to 5 carbon atoms or ArCOO, Ar being selected from the group consisting of phenyl, benzyl, cinnamyl, phenethyl and styryl, and wherein the said alkanoyloxy, alkenylcarbonyloxy or ArCOO may optionally be substituted by at most three substituents X and the radical Ar may be optionally substituted with 1 to 3 C_{1-4}-alkyl groups;

when R_3 designates



R_2 is hydrogen, and R_1 is formyloxy, acetoxy, alkanoyloxy of 3 to 7 carbon atoms, alkenylcarbonyloxy of 3 to 5 carbon atoms, or ArCOO, Ar being selected from the group consisting of phenyl, benzyl, cinnamyl, phenethyl and styryl, and wherein said alkanoyloxy, alkenylcarbonyloxy or ArCOO may optionally be substituted by at most three substituents X and the radical Ar may be optionally substituted with 1 to 3 C_{1-4}-alkyl groups; and when R_3 designates hydrogen or alkanoyl containing not more than 5 carbon atoms, R_1 is hydrogen and R_2 is alkanoyloxy of 2 to 5 carbon atoms;

wherein X is selected from the group consisting of C_{1-4}-alkoxy, C_{2-4} alkanoyl, C_{2-4} alkanoyloxy, C_{2-4} alkoxycarbonyl, halogen, nitro, cyano, trifluoromethyl, di-C_{1-4}-alkylamino, C_{1-4} alkylthio, methylsulfinyl, methylsulfonyl, oxo, thioxo, C_{1-4} alkanoylamino and carboxyl.

4,364,867

N-(1-METHYL-2-PYRROLIDINYLMETHYL)-2,3-DIMETHOXY-5-METHYLSULFAMOYL BENZAMIDE AND ITS DERIVATIVES

Michel Thominet, and Jacques Perrot, both of Paris, France, assignors to Societe d'Etudes Scientifiques et Industrielles de l'Ile de France, Paris, France

Continuation of Ser. No. 82,421, Oct. 5, 1979, Pat. No. 4,263,316. This application December 11, 1980, Ser. No. 215,210

Claims priority, application France, October 11, 1978, 78 29005

Int. Cl.³ C07D *207/09*

U.S. Cl. 548—567 **1 Claim**

1. A compound selected from the group consisting of N-(1-methyl-2-pyrrolidinylmethyl)-2,3-dimethoxy-5-methylsulphamoyl benzamide, its N-oxide, its pharmacologically acceptable acid addition salts, its quaternary ammonium salts and levorotatory and dextrorotatory isomers thereof.

4,364,868

COCOABUTTER REPLACEMENT FAT COMPOSITIONS

Neil G. Hargreaves, Billericay, England, assignor to Lever Brothers Company, New York, N.Y.

Filed 1981, Ser. No. 230,825

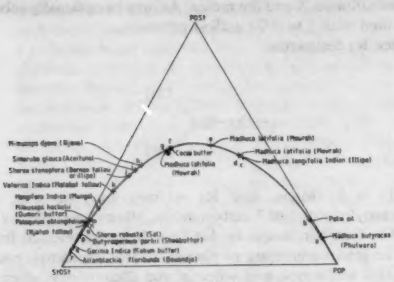
Claims priority, application United Kingdom, 1980, 8004109

Int. Cl.³ C11C *3/02;* **C12P** *7/64*

U.S. Cl. 260—410.7 **20 Claims**

1. Cocoabutter replacement fat composition consisting essentially of a ternary triglyceride mixture of POP, POSt and StOSt represented on a ternary X/Y/Z composition diagram

as exemplified in FIG. 1 under the curve $Z^2=4$ XY, where X=StOSt, Y=POP and Z=POSt, outside a polygonal figure



bounding the composition of POP, POSt and StOSt in natural fats and their blends on the diagram as exemplified in FIG. 1.

4,364,869

PROCESS FOR PRODUCING ALKYL ESTERS OF SATURATED ALIPHATIC CARBOXYLIC ACIDS

Wolfgang H. E. Müller, and Peter Hofmann, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls A.G., Marl, Fed. Rep. of Germany

Filed July 29, 1981, Ser. No. 288,065

Claims priority, application Fed. Rep. of Germany, September 12, 1980, 3034420

Int. Cl.³ B01D *3/36;* **C11C** *3/12;* **C07C** *67/48*

U.S. Cl. 260—410.9 R **7 Claims**

1. A process for the production of alkyl esters of saturated aliphatic carboxylic acids, comprising:

(a) reacting in an alkoxycarbonylation stage starting material olefins with carbon monoxide and alkanols in the presence of a catalyst consisting of a cobalt compound and a promoter selected from the group consisting of pyridine, non-otho-substituted alkylpyridine or mixtures thereof at an elevated pressure of about 10 to 800 bars and an elevated temperature of about 80° to 300° C. to produce a reaction mixture containing reaction products which include said alkyl esters, said cobalt compound, said promoter, and unreacted starting material;

(b) separating said cobalt compound from said reaction mixture;

(c) adding a given carboxylic acid to said reaction mixture separated from said cobalt compound, said carboxylic acid being thermally stable and forming a maximum azeotrope with said promoter under rectification;

(d) rectifying said reaction mixture containing said carboxylic acid and free of said cobalt compound and separating by rectification said azeotrope containing said carboxylic acid and said promoter; and

(e) feeding said separated promoter to said alkoxy-carbonylation stage.

4,364,870

ONE-STEP SYNTHESES OF URANIUM HEXAMETHOXIDE AND MIXED METHOXY URANIUM (VI) FLUORIDES FROM URANIUM HEXAFLUORIDE AND TWO-STEP SYNTHESIS OF URANIUM HEXAMETHOXIDE FROM URANIUM TETRACHLORIDE

Tobin J. Marks; Edward A. Cuellar, both of Evanston, Ill.; Steven S. Miller, New York, N.Y., and Eric Weitz, Evanston, Ill., assignors to Northwestern University, Evanston, Ill.

Filed May 5, 1980, Ser. No. 137,440

Int. Cl.³ C07F *5/00;* **B01J** *19/08*

U.S. Cl. 260—429.1 **3 Claims**

1. A process for synthesizing uranium hexamethoxide by reacting uranium hexafluoride with a methoxide having formula M $(OCH_3)_x$ wherein M is an electropositive metal of group 1A of the periodic table and x is 1, or M is a silicon residue having 1 to 3 alkyl radicals, and x is an integer from 1 to 3

said method comprising the steps of:

dissolving UF_6 in a dry halogenated hydrocarbon solvent selected from the group consisting of chlorinated aliphatic solvents, chlorofluorinated aliphatic solvents and mixtures thereof cooled to below 0° C.,

suspending said methoxide in a dry halogenated hydrocarbon solvent selected form the group consisting of chlorinated aliphatic solvents, chlorofluorinated aliphatic solvents and mixtures thereof cooled to below 0° C.,

preparing a reaction mixture by gradually adding the solution of UF_6 to the suspension of said methoxide and allowing said reaction mixture gradually to warm up to a temperature of about 0° C.,

separating a red solid reaction product from said halogenated hydrocarbon solvent, and washing said reaction product with a dry hydrocarbon solvent to provide a purified uranium hexamethoxide.

4,364,871

PROCESS FOR MAKING AMINOPOLYCARBOXYLIC ACID CHELATES OF IRON

Katherine H. Svatek, Lake Jackson; David A. Wilson, Richwood, and Freddie Griffin, Jr., Missouri City, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed September 8, 1980, Ser. No. 184,848

Int. Cl.³ C07F *15/02*

U.S. Cl. 260—439 R **3 Claims**

1. An improved process for producing a ferric-ammonium-chelate of ethylenediaminetetraacetic acid (EDTA) wherein an oxide of iron is reacted with said EDTA in the presence of a base, which comprises: (1) providing a mixture in water of ammonia together with said EDTA in a molar ratio of ammonia to EDTA of at least 1.0 but not more than 1.5, (2) adding to said mixture said oxide of iron at less than 1 mole of iron per mole of EDTA, (3) heating said mixture to a reaction temperature within the range of from about 85° to about 105° C., and conducting said reaction in the substantial absence of oxygen, (4) maintaining said reaction temperature for a time sufficient to complete the reaction, (5) cooling said mixture to a temperature within the range of from about 45° to 80° C., (6) introducing ammonia to said mixture in sufficient amount to dissolve and to maintain in solution the iron chelate so formed, (7) cooling said chelate solution to room temperature and (8) oxidizing any ferrous ion present in said chelate solution to the ferric ion.

4,364,872

METHOD OF MAKING ALUMINUM ALKYLS

Steven P. Diefenbach, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed July 13, 1981, Ser. No. 282,493

Int. Cl.³ C07F *5/06*

U.S. Cl. 260—448 A **22 Claims**

1. A method of effecting an alkyl exchange reaction, comprising reacting trialkylaluminum having at least two carbon atoms in the alkyl group with methyl halide in the presence of a bismuth-based catalyst to form an alkyl halide having at least two carbon atoms and an alkyl aluminum product containing at least some aluminum to methyl bonds, said bismuth-based catalyst comprising a bismuth compound which is capable of forming an alkyl bismuth bond or an aryl bismuth bond in the reaction.

4,364,873

METHOD OF MAKING ALUMINUM ALKYLS

Steven P. Diefenbach, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed July 13, 1981, Ser. No. 282,494
Int. Cl.³ C07F 5/06
U.S. Cl. 260—448 A 27 Claims

1. A method of making trimethylaluminum, comprising reacting trialkylaluminum having at least two carbon atoms in the alkyl group with a methyl halide in the presence of a vanadium-based catalyst to form trimethylaluminum and an alkyl halide, said vanadium-based catalyst comprising a vanadium compound, an aluminum alkyl compound and an alkyl iodide.

4,364,874

METHOD OF MAKING ALUMINUM ALKYLS

Steven P. Diefenbach, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed July 13, 1981, Ser. No. 282,495
Int. Cl.³ C07F 5/06
U.S. Cl. 260—448 A 20 Claims

1. A method of making aluminum alkyl or aralkyl compounds comprising reacting a trialkyl or triaralkyl aluminum compound with an alkyl or aralkyl iodide in which the alkyl or aralkyl group differs from at least one of the alkyl or aralkyl groups of the trialkylaluminum compounds at a temperature of from about −20° C. to about 200° C. to form via an uncatalyzed exchange reaction a trialkylaluminum compound product having the alkyl or aralkyl radical of the alkyl or aralkyl iodide reactant and an alkyl or aralkyl iodide having the alkyl or aralkyl radical of the trialkyl or triaralkylaluminum compound.

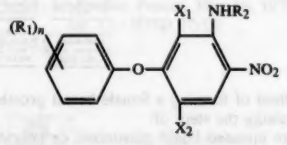
4,364,875

PROCESS FOR THE PREPARATION OF CERTAIN DIPHENYL ETHERS

Richard Sehring, and Wolfgang Buck, both of Ingelheim am Rhein, Fed. Rep. of Germany, assignors to Celamerck GmbH & Co. KG, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 188,480, Sep. 18, 1980, abandoned. This application July 7, 1981, Ser. No. 281,123
Claims priority, application Fed. Rep. of Germany, September 24, 1979, 3938595
Int. Cl.³ C07C 121/78, 95/08, 101/44, 109/04
U.S. Cl. 260—465 E 2 Claims

1. The method of preparing a compound of the formula



wherein

R_1 is hydrogen, halogen, alkyl of 1 to 8 carbon atoms, trifluoromethyl, —CN, acetyl, C_1–C_4-alkoxy or C_1–C_4-alkylthio;

n is 1 when R_1 has all the defined meanings, or 2 or 3 when R_1 is halogen or alkyl;

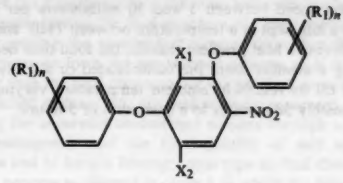
R_2 is hydrogen; alkyl of 1 to 18 carbon atoms; alkenyl of 2 to 16 carbon atoms; alkynyl of 2 to 16 carbon atoms; monosubstituted alkyl of 2 to 6 carbon atoms, where the substituent is hydroxyl, alkoxy of 1 to 4 carbon atoms, phenoxy, halo-phenoxy, (alkyl of 1 to 4 carbon atoms)phenoxy, (alkoxy of 1 to 4 carbon atoms) phenoxy, nitro-phenoxy, cyano-phenoxy, amino or (alkyl of 1 to 4 carbon atoms)thio; benzyl; halo-benzyl; trifluoromethyl-benzyl; $—NR_3R_4$; $—CHR_3—COOR_4$; or $—CHR_3—CONR_4R_5$;

where

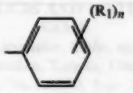
R_3, R_4 and R_5 are each hydrogen or alkyl of 1 to 8 carbon atoms; and

X_1 and X_2 are each hydrogen or halogen,

which comprises reacting a compound of the formula



wherein n, R_1, X_1 and X_2 have the meanings previously defined, and the two



groups may be identical to or different from each other, with an amine of the formula

$$H_2N—R_2$$

wherein R_2 has the meanings previously defined, at a temperature between about 20° and 160° C.

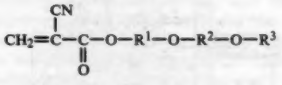
4,364,876

NOVEL 2-CYANOACRYLATE, PROCESS FOR PRODUCING SAME AND CURABLE COMPOSITION COMPRISING SAME

Kaoru Kimura, Kuroishi, and Kazuyuki Sakabe, Tokai, both of Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

Filed March 16, 1981, Ser. No. 244,276
Claims priority, application Japan, March 27, 1980, 55-38174
Int. Cl.³ C07C 121/30
U.S. Cl. 260—465.4 3 Claims

1. A 2-cyanoacrylate represented by the formula:



(I)

wherein R^1 is a 1,2-alkylene group having 2–4 carbon atoms, R^2 is an alkylene group having 2–4 carbon atoms and R^3 is an alkyl group having 1–6 carbon atoms.

4,364,877

PROCESS FOR PRODUCING FRITTED ALUMINA MEMBERS

Rene Clement, and Francis Gugliermotte, both of Castries, France, assignors to Societe Europeenne des Ceramiques A lumineuses "EUROCERAL", Vendargues, France

Filed 1981, Ser. No. 228,896
Claims priority, application France, 1980, 80 02787
Int. Cl.³ C04B 35/44
U.S. Cl. 264—1.2 7 Claims

1. A process for producing fritted alumina members having a high optical transparency and a high mechanical strength from a high purity alumina powder to which has been added an organic binder and a small percentage of oxide, particularly of magnesium and/or rare earth, followed by the shaping thereof and subjecting them to two successive heat treatments, namely

a first treatment in an oxidizing atmosphere to remove the binder and consolidate the particles and a second treatment at a higher temperature and in a hydrogen-rich atmosphere for obtaining fritting, wherein the second heat treatment takes place by continuously passing the said members at a constant translation speed between 3 and 50 millimeters per minute through a kiln kept at a temperature between 1820° and 1970° C. and having a heat gradient therein, the total time necessary for firing a member from the consolidated or slightly warm state up till its return to ambient temperature varying from approximately 30 minutes to a maximum of 5 hours.

4,364,878

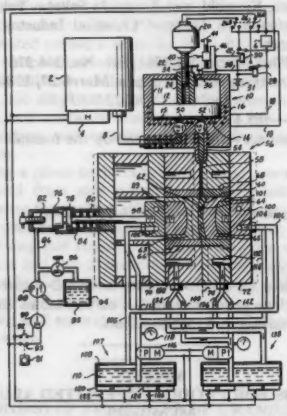
METHOD FOR MOLDING OPHTHALMIC LENSES

Albert J. Laliberte, South Woodstock, Conn., and Joseph L. Jerominek, Dudley, Mass., assignors to Omnitech Inc., Southbridge, Mass.

Continuation of Ser. No. 932,442, Aug. 10, 1978, abandoned. This application 1980, Ser. No. 123,518

Int. Cl.³ B29D *11/00*

U.S. Cl. 264—2.2 **10 Claims**



1. A method of forming a lens of thermoplastic resin by injection including the steps of first forming a mold space having a movable surface portion conforming to the shape of the finished lens, then injecting into said space a measured charge of plasticized thermoplastic resin equal to the amount required to form the finished lens, said mold space having a volume greater than that of said injected charge, then moving said surface portion in such a direction while confining said injected resin to said space as to reduce the volume of said mold space and apply pressure to said charge, cooling said mass while applying said pressure thereto, and removing said pressure when the charge reaches the glass transition temperature of said resin.

4,364,879

METHOD FOR FORMING A COATED ARTICLE INCLUDING ULTRA-VIOLET RADIATION OF THE COATING

Karl Gut, Benken; Marcel Voegeli, Schaffhausen, both of Switzerland, and Haiko Schneider, Hemmenhofen, Fed. Rep. of Germany, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

PCT No. PCT/CH79/00104, § 371 Date March 21, 1980, § 102(e) Date March 20, 1980, PCT Pub. No. WO80/00249, PCT Pub. Date 1980

PCT Filed July 18, 1979, Ser. No. 192,518

Claims priority, application Switzerland, July 21, 1978, 7888/78; July 13, 1979, 6527/79

Int. Cl.³ B29C *25/00;* B29D *9/00*

U.S. Cl. 264—22 **4 Claims**

1. In a method for making molded plastic articles, wherein a particulate filler is mixed with a hardenable resin to form a mixture and the mixture is deposited in a mold and the resin of said mixture is hardened to form a self-supporting molded article with open pores, the molded article is placed under vacuum, the pores are filled with a hardenable material, and the hardenable material is hardened in a final curing step to form a molded article; the improvement comprising:

(a) coating the molded article with a liquid, ulta-violet light curable, unsaturated polyester resin composition,

(b) immersing the polyester coated article in a bath of glycol or glycerol, and

(c) curing said polyester resin with ultra-violet light by irradiating said polyester resin coating on said article while said article is in said bath.

4,364,880

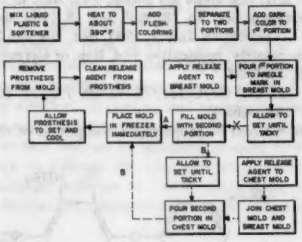
METHOD FOR MAKING A BREAST PROSTHESIS

Jeanette W. Howse, Rte. 3 Box 908, St. Cloud, Fla. 32769

Filed 1981, Ser. No. 228,709

Int. Cl.³ B29C *5/08, 9/08*

U.S. Cl. 264—28 **8 Claims**


MIX LIQUID PLASTIC & SOFTENER
HEAT TO ABOUT 350°F
ADD FLESH-COLORING
SEPARATE TO TWO PORTIONS
ADD DARK COLOR TO 2nd PORTION
REMOVE PROSTHESIS FROM MOLD
CLEAN RELEASE AGENT FROM PROSTHESIS
APPLY RELEASE AGENT TO BREAST MOLD
POUR 1st PORTION TO AREOLE MARK IN BREAST MOLD
ALLOW PROSTHESIS TO SET AND COOL
PLACE MOLD IN FREEZER IMMEDIATELY
FILL MOLD WITH SECOND PORTION
ALLOW TO SET UNTIL TACKY
ALLOW TO SET UNTIL TACKY
APPLY RELEASE AGENT TO CHEST MOLD
POUR SECOND PORTION IN CHEST MOLD
JOIN CHEST MOLD AND BREAST MOLD

1. A method of forming a female breast prosthesis using a mold comprising the steps of:

heating an uncured liquid plasticized or polyvinylchloride plastic to a temperature greater than the curing temperature of the plastic;

tinting a first portion of the heated liquid plastic to a selected first color representative of the color of the nipple and areola of a human female breast;

tinting a second portion of the heated liquid plastic to a selected second color representative of the color of a human female skin;

coating the mold with a release agent;

pouring the first portion of the heated liquid plastic into the nipple-areola portion of the mold;

partially curing the poured liquid plastic until it becomes slightly tacky;

pouring the second portion of the heated liquid plastic into the mold and over the nipple-areola portion to a preselected level in the mold to form the breast prosthesis;

chilling the mold immediately after pouring the second

portion to a selected low temperature much lower than ambient; and

curing the breast prosthesis in the mold at the selected low temperature.

4,364,881

CONTINUOUS EXTRUSION METHOD OF MANUFACTURING CERAMIC HONEYCOMB STRUCTURES WITH THE AID OF SCREW TYPE VACUUM EXTRUDING MACHINE

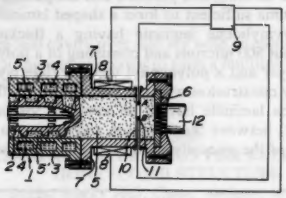
Hiroshige Mizuno, Rye, N.Y., and Akiyoshi Kurishita, Kasugai, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 820,247, Jul. 29, 1977, abandoned. This application 1981, Ser. No. 234,606

Claims priority, application Japan, August 10, 1976, 51-94550

Int. Cl.³ B29D *23/04*

U.S. Cl. 264—40.7 **4 Claims**



1. In a continuous extrusion method of manufacturing ceramic honeycomb structures comprising extruding a ceramic raw material batch through an extrusion die of a screw type vacuum extruding machine, the improvement comprising the step of adjusting a temperature differential between the center and periphery of a section of the raw material batch by passing the raw material batch between a first cylinder provided with a cooling means and a rotating screw and further passing the raw material batch through a second hollow cylinder provided with a heating means for heating the periphery of the raw material batch, said section being parallel to said die and located 40 mm from said die, and the relation between the temperature (Tp) of said periphery and the temperature (Tc) of said center at said section being $10° C. > Tp - Tc \geqq 0.5° C.$

4,364,882

PROCESS AND AN APPARATUS FOR THE EXTRUSION OF PLASTIC PIPES WITH COMPOSITE WALLS

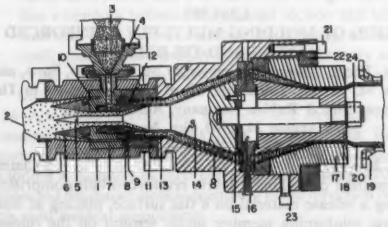
Marcel Doucet, Paris, France, assignor to Societe Generale de Canalisations Sogecan, Paris, France

Filed May 8, 1980, Ser. No. 147,945

Claims priority, application France, May 10, 1979, 79 12515

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—45.9 **8 Claims**



1. In a process for the manufacture by coextrusion of plastic pipe having a composite structure formed of inner and outer walls of plastic material enclosing an intermediate layer of a filling material which is synthetic plastic or polymeric in nature and which adheres to said walls comprising introducing the material constituting said pipe walls in a heated and plastic state, separating the introduced plastic material into two distinct streams, injecting the filling material in a plastic state to between the separated streams of material constituting the inner and outer walls, bringing the three streams into a contacting relation with the stream of filling material sandwiched between the streams forming the inner and outer walls to form a composite having the final structure, the improvement comprising passing the sandwiched streams through a divergent passageway to form the sandwiched streams to a dimension greater than the final dimension of the product, separating the sandwiched streams into circumferentially separated streams, passing the separated sandwiched streams through a convergent passageway and die for rejoinder of said separated streams and to form a homogeneous pipe to final dimension.

5. A process as claimed in claim 1 in which the filling material is an expandable porous material.

4,364,883

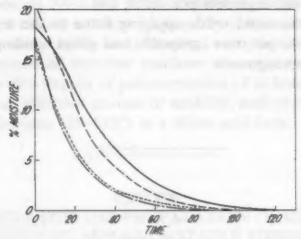
CERAMIC PRODUCTS AND METHOD OF DRYING SAME

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 32,050, Apr. 23, 1979, abandoned, which is a continuation of Ser. No. 864,186, Dec. 27, 1977, abandoned. This application November 7, 1980, Ser. No. 205,033

Int. Cl.³ C04B *33/36*

U.S. Cl. 264—60 **5 Claims**



1. A method of producing clay, alumina or silica base ceramic products, comprising: adding chopped strand of mineral filaments having a hydrophilic surface into a green ware forming formulation that includes water, said filaments being bonded together into the strand by binder that is sufficiently water soluble that the strand is completely filamentizable when agitated in water; mixing the strand and formulation together under conditions which break the strand apart into individual monofilaments and disperse the monofilaments throughout the green ware forming formulation to give a three dimensional network of from 300 to 150,000 inches of filament per cubic inch; molding the mixture to form green ware under conditions preserving said three dimensional network; drying the green ware under conditions allowing the filaments to aid in moving water from the interior of the green ware to its surface; and firing the products above a temperature which fuses the green ware into a hard ceramic product.

4,364,884

METHOD OF MANUFACTURING A RADOME

G. Robert Traut, South Killingly, Conn., assignor to Rogers Corporation, Rogers, CT

Filed May 15, 1980, Ser. No. 149,952

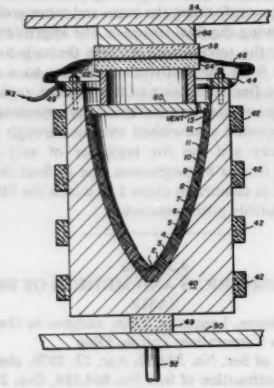
Int. Cl.³ C04B *37/00*

U.S. Cl. 264—118 **9 Claims**

1. A method for the production of complex shapes from fiber reinforced polymeric material comprising the steps of:

forming a mixture of polymeric material in powder form and reinforcing fibers;

cold molding the mixture to form a fiber-polymer composite billet wherein the majority of the fibers are orientated in a desired direction ;



machining preform segments of the complex shape from the billet, the segments being formed to have planar abutting surfaces;

stacking the segments in a mold; and

heating the mold while applying force to the segments to sinter the polymer composite and effect bonding between adjacent segments.

4,364,885

PROCESS FOR PRODUCING EASILY ADHERABLE POLYESTER FILM

Tamaki Kanai, Sagamihara; Takashi Yamagichi, Yokohama; Hirofumi Yoshikawa, Hachioji; Kenji Suzuki, and Yoshikatsu Ohta, both of Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed June 11, 1981, Ser. No. 272,524

Claims priority, application Japan, June 16, 1980, 55-80229

Int. Cl.³ B29D *9/00;* **B29C** *17/02;* **B32B** *27/18*

U.S. Cl. 264—134 **4 Claims**

1. A process for producing an easily adherable biaxially stretched polyester film, which comprises coating a primer composition consisting essentially of (A) an aqueous dispersion of polyurethane and (B) a montan wax salt on the surface of a polyester film which has not yet been stretched completely, drying the coating, completing the stretching of the coated film, and then heat-setting it to thereby form a primer coated layer on the film surface, said aqueous dispersion of polyurethane (A) being an aqueous dispersion of polyurethane free from an emulsifying agent, which is obtained by reacting (i) a dihydroxy compound having a molecular weight of 750 to 3,000, (ii) a polyisocyanate compound, (iii) a water-soluble salt of an aliphatic aminocarboxylic acid or an aliphatic sulfonic acid having at least one hydrogen atom bonded to nitrogen, and (iv) a compound having a molecular weight of not more than 300 and two hydrogen atoms reactive with the isocyanate groups and being free from a salt group as a chain extender in a solution or dispersion in a water-containing organic solvent, and finally removing the organic solvent portion.

4,364,886

PROCESS FOR THE MANUFACTURE OF POLYVINYLIDENE FLUORIDE - INCOMPATIBLE POLYMER LAMINATES

Albert Strassel, Oullins, France, assignor to Chimiques Ugine Kuhlmann, Courbevoie, France

Filed 1981, Ser. No. 236,821

Claims priority, application France, March 7, 1980, 80 05151

Int. Cl.³ B29D *9/00, 7/02;* **B29F** *3/00*

U.S. Cl. 264—171 **5 Claims**

1. The process of making a molded article having at least one outer surface of a polyvinylidene fluoride comprising first placing a preformed polyvinylidene fluoride laminate into a compression or injection mold so as to have a polyvinylidene fluoride layer adjacent a wall of the mold, introducing a moldable polymer that is incompatible in terms of adhesion to polyvinylidene fluoride but adherent to polymethyl methacrylate to the mold, and molding at a pressure and temperature sufficient and for a time sufficient to form a shaped laminate; said preformed polyvinylidene laminate having a thickness no greater than about 800 microns and consisting of a polyvinylidene fluoride layer and a polymethyl methacrylate layer and being formed by coextrusion with the polyvinylidene fluoride used to form the laminate having an apparent viscosity, in poises at 200° C., between the minimum and maximum values for at least two of the viscosity gradients set forth below:

Velocity Gradient	Values of Apparent Viscosities In Poise	
Sec-1	Minimum	Maximum
3.54	30×10^3	200×10^3
11.81	18×10^3	93×10^3
35.4	11×10^3	47×10^3
118	6.5×10^3	21×10^3
354	3.9×10^3	10×10^3
1,181	2.3×10^3	4.5×10^3

and the polymethyl methacrylate used to form the laminate having a viscosity, in poises at 200° C., between the minimum and maximum values for any given viscosity gradient set forth below:

Velocity Gradient	Values of Apparent Viscosities in Poise	
Sec-1	Minimum	Maximum
3.54	100×10^3	500×10^3
11.81	50×10^3	280×10^3
35.4	25×10^3	150×10^3
118	13×10^3	80×10^3
354	7×10^3	50×10^3
1,181	3.5×10^3	30×10^3

4,364,887

METHOD OF MOLDING MULTI-PLY REINFORCED PANELS AND/OR BELTS

Cletus A. Becht, Akron; Ramamoorthy M. Krishnan, Stow, and James M. Hogan, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

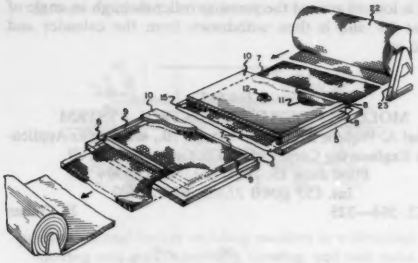
Filed August 24, 1981, Ser. No. 295,399

Int. Cl.³ B29H *3/08, 7/22*

U.S. Cl. 264—171 **5 Claims**

1. A method of making a fabric reinforced belt comprising spreading a release material on a flat surface, placing at least one fabric reinforcing member under tension on the release material, forming a pressurizable cavity over said fabric reinforcing member by locking the cavity member having at least one injection opening and a top and side closure means, filling to pressurize said cavity with an elastomeric precursor to encapsulate the fabric, setting said precursor to form a belt ply, inverting said ply to expose the side in contact with said release

material, placing at least one other fabric reinforcing member on the exposed side of said ply, forming said pressurizable cavity over said ply by locking said cavity member, filling to



pressurize said cavity over said ply with an elastomeric precursor and curing said precursor to form a multiple ply belt having the plies bonded together.

4,364,888

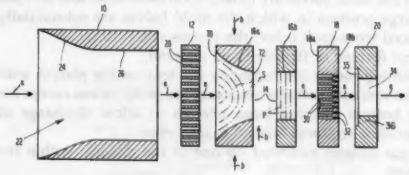
METHOD AND APPARATUS FOR EXTRUDING A HONEYCOMB STRUCTURE

Philip S. Levin, Rocky Hill, Conn., assignor to Corning Glass Works, Corning, N.Y.

Filed May 4, 1981, Ser. No. 260,343

Int. Cl.³ B29F *3/04*

U.S. Cl. 264—177 R **29 Claims**



1. Apparatus for extruding a honeycomb structure having thin-walled cells from an extrudable material comprising:

an extrusion die having an inlet face, an outlet face and passageways extending between said faces for forming said honeycomb structure from said material, said passageways including a plurality of feed holes communicating with interconnected discharge slots sequentially in the direction of extrusion;

an entrance cavity coupled to said inlet face, said entrance cavity including a funnel section tapering inwardly from a larger cross-sectional cavity area to a smaller cross-sectional cavity area and a substantially straight-walled section extending between said funnel section and said inlet face and with a cross-sectional cavity area substantially conforming to said smaller cross-sectional cavity area and to the cross-sectional area of the structure to be extruded through said die.

24. A method of extruding a honeycomb structure having a plurality of thin-walled cells from an extrudable Bingham plastic material using an extrusion die having passageways including a plurality of feed holes communicating with interconnected discharge slots sequentially in the direction of extrusion, said method comprising:

advancing the material toward said die;

reducing the cross-sectional area of the material transverse to the direction of advancement;

creating shearing flow in the material as the material is advanced toward the die and the cross-sectional area is reduced;

maintaining constant the reduced cross-sectional area of the material;

establishing plug flow in the material and substantially terminating shearing flow in the material while maintaining constant the reduced cross-sectional area prior to reaching the die; and

extruding the material through the die so as to form the structure with a cross-sectional area substantially conforming to the reduced cross-sectional area of the material prior to reaching the die.

4,364,889

PROCESS FOR PREPARING A COTTON-LIKE RAYON FIBER

Charles J. Geyer, Jr., Berwyn, and Ben E. White, Wayne, both of Pa., assignors to Fiber Associates, Inc., Berwyn, Pa.

Filed May 15, 1980, Ser. No. 150,094

Int. Cl.³ D01F *2/06*

U.S. Cl. 264—188 **3 Claims**

1. A process for producing cotton-like rayon filaments having a degree of polymerization above about 500, an alkali solubility below about 7.5%, said alkali solubility being a measure of the percentage of said fiber dissolved in an aqueous solution comprising 10% sodium hydroxide, a tenacity of about 5–6 g/d, a conditioned elongation of 10–20%, a wet strength of 2.5–3.25 g/d, and a wet modulus of 7–9 g/d at 5% elongation, which comprises spinning into a formaldehyde-free bath having an acid concentration of 5.0–8.0% and a zinc salt concentration of 3.0–5.0% at a temperature between about 30°–40° C., a viscose solution prepared by continuously steeping, mercerizing, aging and filtering, said viscose solution being composed of cellulose xanthate in a concentration of 6.0–9.0% with a degree of polymerization of at least 500, and containing an effective amount of modifier, and stretching the resulting filaments 125–135% in a dilute acid bath.

4,364,890

PROCEDURE FOR THE PREPARATION OF CRIMPED HIGH-WET-MODULUS STAPLE FIBRES

Erich E. Treiber, Lidingö; Dag E. Ehrengard, Stockholm, and Owe S. Lidbrandt, Sollentuna, all of Sweden, assignors to Svenska Rayon AB, Valberg, Sweden

PCT No. PCT/SE79/00235, § 371 Date July 14, 1980, § 102(e) Date July 9, 1980, PCT Pub. No. WO80/00979, PCT Pub. Date May 15, 1980

PCT Filed November 14, 1979, Ser. No. 199,464

Claims priority, application Sweden, November 14, 1978, 7811741

Int. Cl.³ D01F *2/08*

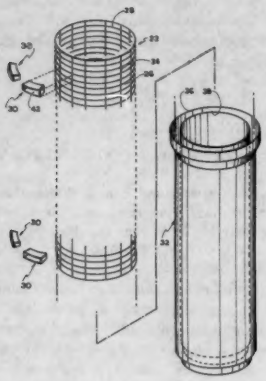
U.S. Cl. 264—191 **8 Claims**

1. In a process for the production of crimped high-wet-modulus staple fibers wherein fibers are spun from an unripe cellulose viscose, containing 7–8% cellulose, 6.8–7.5% sodium hydroxide, 35–38% carbon disulphide and one or more metal-ion-free, organic modifiers, the improvement which comprises adding to said viscose after xanthation has been completed, but prior to spinning, a substance, selected from the group consisting of unsubstituted compounds of cyclohexanone or cyclopentanone, methylated compounds of cyclohexanone or cyclopentanone, polyalcylated monoamino compounds of cyclohexane or cyclopentane in an amount in the range from about 0.3% to 5% based on the amount of cellulose in the viscose, the fibers being spun at gamma number of <50 and a salt index of <5 in a coagulation bath of 30°–40° C. temperature containing 60–80 grams sulphuric acid, 100–180 grams sodium sulphate and 30–55 grams zinc sulphate, all calculated per liters, and stretched 110–120% in an acid bath with a temperature of 90°–100° C.

4,364,891
SLOTTED CONCRETE PIPE

Vincent A. Saggese, 15 Pleasant View Dr., Bayville, N.Y. 11709

Filed October 31, 1979, Ser. No. 89,955
Int. Cl.³ B32B 9/00
U.S. Cl. 264—263 11 Claims

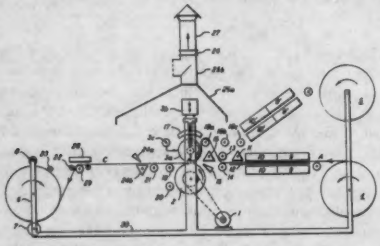


1. A method of forming slotted concrete pipe comprising; forming a grid of reinforcing bars, arranging a plurality of inserts with the grid with each insert having a through passageway, and covering the grid and inserts with concrete so as to form a hollow tube of concrete with the grid and inserts permanently embedded therein, and the grid of bars providing reinforcement for the concrete and the passageways of the inserts forming slots for communication between the interior and exterior of the concrete pipe at predetermined locations.

4,364,892
PROCESS FOR SURFACE TREATMENT OF FOAMED SHEETS

Helmut Rehlen, Härte 6, 7951 Ingoldingen, and Jürgen Roellinghoff, Fohrenweg 9, 7950 Biberach-Mettenberg, both of Fed. Rep. of Germany

Filed July 20, 1979, Ser. No. 59,357
Claims priority, application Fed. Rep. of Germany, July 25, 1978, 7822256[U]; July 25, 1978, 7822259[U]; July 25, 1978, 7822264[U]; July 25, 1978, 7822278[U]; July 25, 1978, 7822284[U]
Int. Cl.³ B29C 17/00; B29D 27/00
U.S. Cl. 264—284 4 Claims

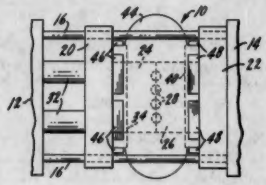


1. A process for the continuous modification of the surface portion only of a foamed plastic web to impart high mechanical resistance with retention of air permeability and elasticity, which comprises preheating the web to a temperature below its melting point, then subjecting the preheated web to shock heating by means of a device disposed at a distance of 5 to 10 mm from the web and at a temperature of from 150° C. to 300° C., and then passing the preheated and shock heated web through the nip of a calender comprising a pressure roller and a backing roller, the pressure roller being heated to a predetermined temperature above the melting point of the web and up to 500° C., the web being fed to the calender nip in such a way that it is looped around the pressure roller through an angle of at least 30° and is then withdrawn from the calender and wound up.

4,364,893
MOLD ATMOSPHERE CONTROL SYSTEM

Michael A. Waters, Elk Grove Village, Ill., assignor to Application Engineering Corporation, Elk Grove Village, Ill.

Filed June 15, 1981, Ser. No. 273,904
Int. Cl.³ B30B 11/02; B29C 3/00
U.S. Cl. 264—325 21 Claims



1. A mold atmosphere control system for a molding press of the kind comprising two platens, each bearing a mold half, cyclically movable between a closed molding position in which the mold halves are closed upon each other and an open discharge position in which the mold halves are substantially displaced from each other, the system comprising:

a tent formed of flexible sheet material;

mounting means for mounting the tent on the platens with the tent substantially enclosing the mold halves except for a bottom opening large enough to allow discharge of molded products formed in the press;

an gas diffuser mounted on one of the platens, within the tent;

and gas supply means, connected to the diffuser, for continuously supplying a stream of gas, under pressure, flowing through the diffuser into the tent and out through the bottom opening, the gas stream having a volume sufficient to maintain the tent inflated throughout the mold cycle of the press.

4,364,894
METHOD FOR MOLDING A REINFORCED PLASTIC TUBULAR BODY HAVING A SOCKET, AND MOLD THEREFORE

Masakatsu Mayumi, Osaka; Takeshi Okuyama, Kyoto, and Kenji Mitooka, Okayama, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed April 16, 1981, Ser. No. 254,663
Claims priority, application Japan, April 21, 1980, 55/53383; April 21, 1980, 55/55090[U]
Int. Cl.³ B29D 3/02, 23/00; B29C 1/00
U.S. Cl. 264—334 8 Claims

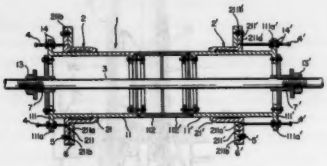
1. A method for molding a socket-type plastic tubular body, comprising:

placing an annular member on the periphery of a cylindrical section of a socket molding member and sliding it axially along the cylindrical section to a predetermined position where one side of the annular member will be contacted by plastic of which the tubular body is to be molded during the molding, and fixing said annular member at said predetermined position;

placing said socket-molding member on the periphery of a tubular section of a main mold body and sliding it axially

along the tubular portion to a further predetermined position and fixing it to the tubular section at said further predetermined position for forming a mold;

forming a layer of plastic molding material around the thus formed mold and curing it; and



pushing on said socket-molding member in a direction form moving said socket-molding member and said main mold body out of the thus molded layer of plastic molding material and with a force which reacts on said annular member for pulling the socket-molding member and the main mold body out of the thus molded layer of plastic.

4,364,895

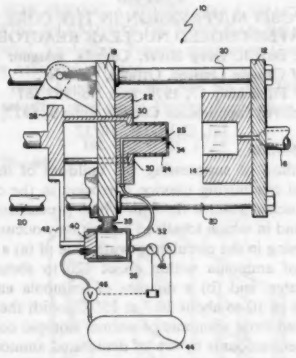
FLUID-ASSISTED CORE-RELEASE METHOD AND APPARATUS

J. Larry Underwood, c/o Underwood Mold Company, Inc. 104 Dixie Dr., Woodstock, Ga. 30188

Filed July 29, 1981, Ser. No. 288,168

Int. Cl.³ B29C *7/00*; B29F *1/14*

U.S. Cl. 264—335 **10 Claims**



1. An apparatus for assisting in the removal of an injection-molded article from a core of a mold in which th article was formed, the mold core being movable with respect to an ejector means for mechanically removing the molded article from the core, the apparatus comprising

a conduit leading to a surface of the mold core against which the molded article is formed, and

means for introducing into the conduit a measured volume of fluid at about atmospheric pressure at a rate controlled by the rate of relative movement between the core and the ejector means.

10. A method of assisting in the removal of an ejection-molded article from a core of a mold in which the article was formed, the mold core being attached to a platen and having an ejector means movable with respect to the platen for mechanically removing the molded article from the core, the method comprising the steps of

providing a conduit leading to a surface of the mold core against which the molded article is formed, and

introducing into the conduit a measured volume of fluid at about atmospheric pressure at a rate controlled by the rate of relative motion between the platen and the ejector means.

4,364,896

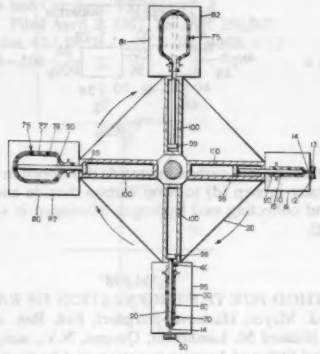
METHOD FOR MAKING A MULTI-LAYERED BLOWN PLASTIC CONTAINER

Robert F. Kontz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed September 21, 1981, Ser. No. 303,759

Int. Cl.³ B29C *17/07*; B29D *9/00*

U.S. Cl. 264—513 **11 Claims**



1. A method of making a hollow blown plastic container comprising the steps of:

A. injection molding a first parison of thermoplastic material,

B. bringing the temperature of the first parison to its orientation temperature and axially stretching the parison,

C. injection molding at least a second thermoplastic parison around the stretched first parison to form a multi-layered parison,

D. bringing the multi-layered parison to orientation temperature, and

E. blowing the multi-layered parison at the orientation temperature of Step D to form a multi-layered oriented hollow plastic container in which the inner layer is oriented in the axial direction and the hoop direction and the outer layer is oriented in the hoop direction.

4,364,897

MULTI-STEP CHEMICAL AND RADIATION PROCESS FOR THE PRODUCTION OF GAS

Russell D. O'Neal, Ann Arbor; Charles B. Leffert, Troy; Theodor Teichmann, and Robert J. Teitel, both of Ann Arbor, all of Mich., assignors to Texas Gas Transmission Corporation, Owensboro, Ky.

Filed 1975, Ser. No. 548,230

Int. Cl.³ G21B *1/00*; C01B *3/12*

U.S. Cl. 376—148 **2 Claims**

1. A process for producing hydrogen comprising the steps of:

(a) injecting carbon dioxide into the central reaction chamber of a fusion reactor,

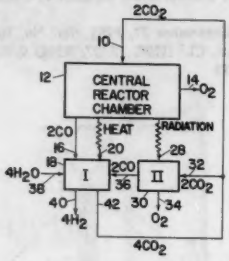
(b) causing within said chamber a deuterium-tritium fusion reaction producing 14.1 mev neutron radiation such that said carbon dioxide is dissociated radiolytically into carbon monoxide and oxygen,

(c) removing said carbon monoxide and oxygen from said chamber for external use,

(d) reacting said carbon monoxide developed in step (c) with water to form carbon dioxide and pure hydrogen outside said reaction chamber, and

(e) collecting said hydrogen developed in step (d) thereby avoiding fusion fuel contamination,

(f) subjecting carbon dioxide obtained in step (d) to high energy neutron flux radiation escaping from said central reaction chamber to form carbon monoxide and oxygen, and



(g) reacting said carbon monoxide developed in step (f) with water in step (d) to form carbon dioxide and hydrogen, and collecting said hydrogen developed in steps (d) and (g).

4,364,898

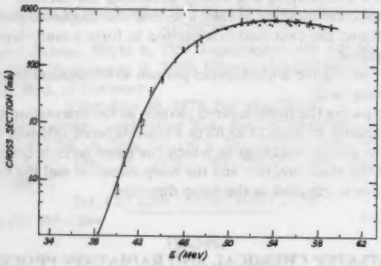
METHOD FOR THE PREPARATION OF RADON-211

Geerd-J. Meyer, Hannover-Burgdorf, Fed. Rep. of Germany, and Richard M. Lambrecht, Quogue, N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed October 10, 1980, Ser. No. 195,967

Int. Cl.³ G21G *1/10*

U.S. Cl. 376—190 **5 Claims**



1. A method for the production of ^{211}Rn comprising bombarding ^{209}Bi with ^{7}Li particles according to the nuclear reaction

$$^{209}Bi(^{7}Li,5n)^{211}Rn.$$

4,364,899

ASSEMBLY FOR PASSAGE THROUGH A CONTAINMENT SLAB FOR TRANSFERRING IRRADIATED NUCLEAR FUEL

Michel Aubert, Manosque, and Antoine Bret, Aix en Provence, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

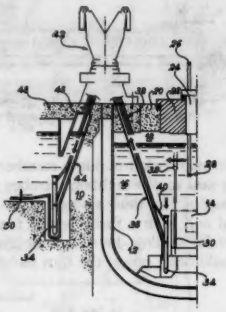
Filed August 15, 1980, Ser. No. 178,290

Claims priority, application France, August 30, 1979, 79 21762

Int. Cl.³ G21C *19/00*

U.S. Cl. 376—264 **11 Claims**

1. In an assembly for passage through a containment slab for transferring irradiated nuclear fuel, comprising a sleeve passing through and fast with the slab and a guide ramp passing through the sleeve and in which moves a handling pot carrying the fuel, a device is provided for evacuating the residual heat dissipated by the fuel, said device comprising a bundle of tubular caloducts disposed parallel to said ramp and extending over a length at least equal to that of said sleeve, each tubular



caloduct being closed and filled with a heat-transfer fluid which is in liquid phase in a lower part of the caloduct and in gaseous phase in a top part of the caloduct, said device further comprising a cooling fluid circulating at least by natural convection around said top part of the caloducts, said top part of said caloducts being located above said slab.

4,364,900

DEPOSIT SUPPRESSION IN THE CORE OF WATER-COOLED NUCLEAR REACTORS

Kenneth A. Burrill, Deep River, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada

Filed May 17, 1978, Ser. No. 907,157

Claims priority, application Canada, June 9, 1977, 280204

Int. Cl.³ G21C *19/32*

U.S. Cl. 376—306 **11 Claims**

1. A method of suppressing the build-up of deposits on surfaces and minimizing crevice corrosion in the core of an operating nuclear reactor through which pressurized water is circulated and in which localized boiling may occur, comprising maintaining in the circulating water one of (a) a high concentration of ammonia within about 120 to about 200 mg NH_3/kg water, and (b) a mixture of ammonia and lithium giving a pH of 10 to about 10.7 at 25° C.; with the ammonia being selected from ammonia of normal isotopic composition and equivalent amounts by wt. of deuterated ammonia.

4,364,901

ANTI-FLY-OFF DEVICE

Claude Feutrel, Vauhallan, France, assignor to Commissariat a l'Energie Atomique, France

Filed August 27, 1980, Ser. No. 181,705

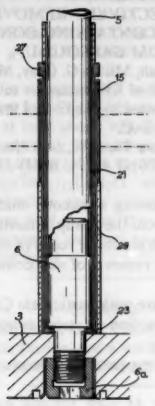
Claims priority, application France, September 6, 1979, 79 22309

Int. Cl.³ G21C *3/34*

U.S. Cl. 376—438 **2 Claims**

1. A nuclear fuel assembly comprising a bundle of sheathed fuel elements maintained in parallel relation in a uniform lattice by means of an array of separate spacing grids fitted with elements for providing resilient application of said grids against said fuel elements, and a rigid structure which is independent of the fuel elements and formed by two parallel upper and lower end plates between which extend brace rods disposed at uniform intervals at the nodes of the fuel element lattice, at least some of the brace rods being surrounded by grid sleeves connected to said grids and sliding along said brace rods and the lower grid resting on a system of spacers extend-

ing between the lower plate and the grid sleeves of said lower grid, wherein a casing is introduced in the grid sleeves of the lower grid around the brace rods, said casing having a lower end and an upper end, said lower end being fixed to the lower



plate, and said upper end having an outer shoulder which prevents the upward displacement of the associated grid sleeve and consequently of the lower grid and the fuel assembly system.

4,364,902

DEVICE FOR FIXING A SPRING TO A SPACING GRID FOR FUEL ELEMENTS OF NUCLEAR REACTORS

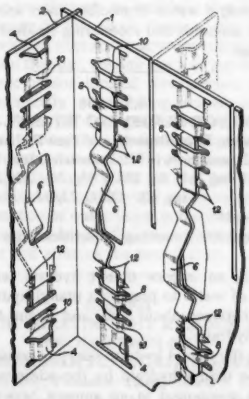
Claude Feutrel, Vauhallan, France, assignor to Commissariat a l'Energie Atomique, France

Filed August 27, 1980, Ser. No. 181,704

Claims priority, application France, September 6, 1979, 79 22311

Int. Cl.³ G21C *3/34*

U.S. Cl. 376—441 **3 Claims**



1. A spacing grid for the fuel-elements of a nuclear reactor, said grid comprising two groups of thin metal sheets which are respectively parallel in each group and perpendicular from one group to the next, said thin sheets delimiting square section cavities, said grid further comprising, in each cavity, at least one rigid support formed in a wall of the cavity traversed by a fuel-element, and at least an elongated spring fixed to another wall of the cavity by fixing means, said spring being bow-shaped and located entirely in said each cavity, said spring holding said nuclear fuel-element against said rigid support, and said fixing means comprising two retaining bridges made in the thin sheet constituting said other wall of the cavity which is opposite said rigid support, two other bridges external of the retaining bridges constituting abutments for stopping the spring in translation, and said other wall of the cavity on which the spring is fixed also comprising means for a precise translation guiding of said spring.

4,364,903

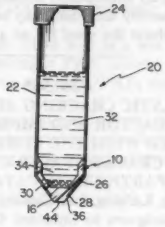
CONTAMINATION-FREE SEPARATION DEVICE

Gilbert S. Bittings, Baltimore, Md., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed April 2, 1981, Ser. No. 250,507

Int. Cl.³ B01L *11/00, 3/00;* B04B *9/12*

U.S. Cl. 422—101 **4 Claims**



1. Apparatus for securing the heavy fraction from a separation tube without disturbing the lighter fraction, characterized by

(a) a tube body having a top opening and a bottom opening;

(b) said tube body having an annular vertical first wall portion;

(c) a second wall portion integral with said first wall portion;

(d) said second wall portion converging from the bottom edge of said first wall portion to said bottom opening;

(e) a plug for said tube bottom opening extending through said bottom opening;

(f) said plug comprising

(1) an annular upper wall portion the top surface of said annular upper wall portion diverging from the outer surface of said upper wall portion toward the axis of said plug;

(2) an annular lower wall portion integral with said upper wall portion and converging downwardly from said upper wall portion;

(3) said upper wall portion and said lower wall portion defining a heavy fraction receiving cup in said plug;

(4) a locking detent in said annular lower wall portion for engaging the bottom surface of said tube body second wall portion; and

(5) the lower end of said annular lower wall portion defining a needle receiving septum in said plug.

4,364,904

TWO PART STAND WITH RECEPTACLES FOR TEST TUBES

Günter Eberle, Gartenstrasse 100,, 7200 Tuttlingen, Fed. Rep. of Germany

Filed September 25, 1978, Ser. No. 945,217

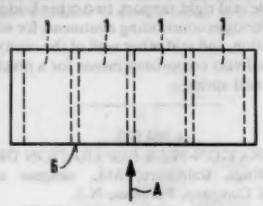
Claims priority, application Fed. Rep. of Germany, September 27, 1977, 2743433

Int. Cl.³ B01L *9/06*

U.S. Cl. 422—104 **3 Claims**

1. A two-part stand for receiving test tubes for insertion into a centrifuge, comprising a top part and a bottom part, wherein the top part includes a plurality of vertical test tube recepta-

cles, and the bottom part represents an open rack for receiving test tubes freely therein while permitting viewing of the test tubes, the two parts are separated by a parting line that is substantially perpendicular to the longitudinal direction of the



vertical receptacles, easily detachable means for interconnecting the top and bottom parts against horizontal displacement, and the bottom part additionally includes a pair of oppositely-directed tabs whereby the stand may be suspended directly in a centrifuge, without the need for an additional receptacle.

4,364,905

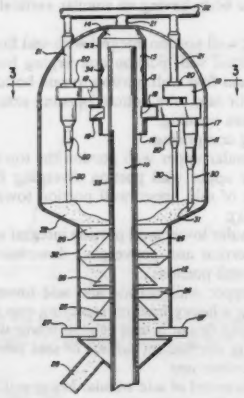
FLUID CATALYTIC CRACKING APPARATUS HAVING RISER REACTOR AND IMPROVED MEANS ASSOCIATED WITH THE RISER REACTOR FOR SEPARATING CRACKED PRODUCT AND ENTRAINED PARTICULATE CATALYST

Robert J. Fahrig, Lansing, and Lansing M. Hinrichs, Chicago, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 96,939, Nov. 23, 1979, Pat. No. 4,295,961. This application 1981, Ser. No. 235,999

Int. Cl.³ B01J *8/18;* **B01D** *45/12;* **B04C** *5/26, 5/28*

U.S. Cl. 422—144 **4 Claims**



1. In an apparatus for fluidized catalytic cracking of hydrocarbon feedstocks, the improvement comprising the combination of an ascending riser reactor having its upper end opening into a separator vessel and means at its lower end for introduction of hydrocarbon feedstock and particulate catalyst, flow reversal means at the upper end of said riser reactor and an attached downwardly directed flow reversal conduit the lower end of which opens into said separator vessel for directing the flow of cracked hydrocarbon product and entrained particulate catalyst downwardly toward said separator vessel, a catalyst stripper located at the bottom of said vessel, and cyclone separator means having gas inlet duct means which are in communication through the wall of said flow reversal conduit with the interior thereof, said cyclone separator means being connected to said separator vessel so as to vent said cracked hydrocarbon products outside of said separator vessel.

4,364,906

METHOD FOR SELECTIVELY REMOVING FLUORINE AND FLUORINE-CONTAINING CONTAMINANTS FROM GASEOUS UF_6

Robert L. Jones, Paducah; Milton G. Otey, Melber, and Roy W. Perkins, Mayfield, all of Ky., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed November 24, 1980, Ser. No. 209,920

Int. Cl.³ C01G *43/06;* **B01D** *53/34*

U.S. Cl. 423—19 **10 Claims**

1. The method of treating a gaseous mixture of UF_6 and a contaminant selected from the group consisting of fluorine and gaseous fluorides which are more reactive with $CaCO_3$ than is UF_6, to effect selective removal of said contaminant from said mixture, comprising:

contacting said mixture with particulate $CaCO_3$ at a temperature effecting reaction of said contaminant and said $CaCO_3$, and

recovering the resulting purified gaseous UF_6.

4,364,907

PROCESS FOR RECOVERY OF RHODIUM VALUES

Robert L. Barnes, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 274,859, Jun. 18, 1981, abandoned. This application May 24, 1982, Ser. No. 381,275

Int. Cl.³ C01G *55/00*

U.S. Cl. 423—22 **1 Claim**

1. Process for the recovery of residual rhodium from tar obtained by submitting a catalyst-tar solution to an extraction using methyl iodide and aqueous hydrogen iodide, thereby recovering catalyst values in the aqueous phase and tar containing residual rhodium in the methyl iodide phase wherein the catalyst-tar solution is derived from a production system in which acetic anhydride is prepared by carbonylating methyl acetate in the presence of rhodium, lithium and methyl iodide wherein the residual rhodium-containing tar is submitted to an extraction using a water-immiscible, inert solvent for the tar and aqueous ammonia and recovering residual rhodium in the aqueous phase.

4,364,908

METHOD FOR PURIFYING TITANYL HYDRATE

Joseph A. Rahm, Long Branch, and Ivan B. Lampe, Oceanport, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed July 24, 1981, Ser. No. 286,305

Int. Cl.³ C01G *23/04*

U.S. Cl. 423—86 **16 Claims**

1. A process for removing impurities from titanyl hydrate comprising:

a. slurrying an impure titanyl hydrate with a sufficient amount of water to prepare a titanyl hydrate slurry containing between about 25% and about 45% by weight titanyl hydrate;

b. treating the titanyl hydrate slurry to solubilize impurities from the titanyl hydrate by the addition of a trivalent titanium compound in an amount between about 0.01 grams and about 0.7 grams trivalent titanium compound as TiO_2 per 100 grams titanyl hydrate as calcined TiO_2 to form a titanyl hydrate slurry containing less than about 10 grams/liter free mineral acid;

c. separating the titanyl hydrate from the treated titanyl hydrate slurry containing solubilized impurities;

d. washing the separated titanyl hydrate to remove residual impurities and to produce a purified titanyl hydrate; and

e. recovering the purified titanyl hydrate.

4,364,909

REMOVAL OF CA^{++} FROM $MGCL_2$

John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed March 16, 1981, Ser. No. 244,377
Int. Cl.[3] C02F *1/42*
U.S. Cl. 423—157 10 Claims

1. A process for substantially reducing the amount of a Ca^{++} ion impurity in a $MgCl_2$ brine, where the $MgCl_2$ is at a concentration of at least about 30% by weight,

said process comprising contacting said $MgCl_2$ brine with a crystalline synthetic zeolite having the empirical formula $Na_{12}[(AlO_2)_{12}(SiO_2)_{12}].nH_2O$ where nH_2O represents waters of hydration, and

recovering from said zeolite the $MgCl_2$ brine with the Ca^{++} ion impurity reduced to a lower level than the initial impurity level.

4,364,910

INTEGRATED FLUE GAS PROCESSING METHOD

Howard P. Willett, Darien, and Even Bakke, Stamford, both of Conn., assignors to Peabody Process Systems, Inc., Stamford, Conn.

Division of Ser. No. 130,202, Mar. 13, 1980, Pat. No. 4,305,909, which is a continuation-in-part of Ser. No. 85,470, Oct. 17, 1979, abandoned. This application June 8, 1981, Ser. No. 271,512
Int. Cl.[3] C01B *17/00*
U.S. Cl. 423—242 13 Claims

1. An integrated process for removing sulfur dioxide and flyash from flue gas comprising feeding flue gas to a scrubber-quencher, introducing aqueous slurry to the scrubber-quencher, saturating the flue gas with water vapor, removing coarse flyash particles from the flue gas in the scrubber-quencher, conducting the flue gas to a spray tower for upward flow therein, spraying alkali slurry into the flue gas within the tower to absorb and react with the sulfur dioxide therein, recirculating slurry containing absorbed sulfur dioxide to increase the residence time for the reaction of alkali and sulfur dioxide, removing slurry containing reaction products of alkali and sulfur dioxide and precipitated flyash from the tower, dewatering the slurry so removed to obtain a waste product, passing the flue gas through an interface tray located in the tower downstream of the alkali slurry spray, spraying the interface tray with an unreactive aqueous solution to substantially saturate the flue gas, passing the flue gas through a wet electrostatic precipitator located downstream of the spray tower, electrostatically precipitating flyash and entrained slurry droplets from the flue gas, removing heat from the saturated flue gas passing through the wet electrostatic precipitator by causing ambient air to flow across the outside of precipitation tubes through which the flue gas passes, heating the flowing ambient air, cooling the precipitation tube walls, causing condensation of water vapor in the flue gas on the tube walls, conducting the heated flowing ambient air away from the precipitator and utilizing the heat therein.

4,364,911

METHOD FOR TREATING THE RESIDUE FROM THE PRODUCTION OF PHOSPHOROCHLORIDOTHIONATES

Russell B. Caffy, Mt. Pleasant, Tenn.; Mark S. Carron, Spring Valley, N.Y.; Robert W. Hull, Mt. Pleasant, Tenn.; Pawan K. Jain, Norwood, N.J., and Harold S. Mickley, Westport, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Filed September 26, 1979, Ser. No. 78,640
Int. Cl.[3] C01B *15/16, 25/26, 17/00*
U.S. Cl. 423—317 6 Claims

1. A method of treating distillation residue from the production of phosphorchloridothionates in a continuous or semi-continuous manner comprising introducing the residue into sufficient agitated water to form a pumpable and storeable slurry having a temperature below that necessary to cause decomposition of the residue and hydrolyzing the slurry in controllable amounts to decompose the residue and produce hydrolysis by-products comprising sulfur, phosphoric acid, and decomposition gases at controllable rates.

4,364,912

POST PRECIPITATION CONTROL OF LOW-IRON PHOSPHORIC ACID, WITHOUT PERLITE

Richard N. Hill, Lakeland, Fla., assignor to W. R. Grace & Co., New York, N.Y.

Filed July 20, 1981, Ser. No. 284,623
Int. Cl.[3] C01B *25/16*
U.S. Cl. 423—321 R 6 Claims

1. The method of preparing a solids-containing wet process phosphoric acid having a P_2O_5 concentration of 56–62 weight % wherein said solids remain substantially suspended, and are soft, free-flowing, and non-caking; said acid prepared in the absence of perlite and consisting essentially of the following steps:

(a) preparing a crude dilute acid in a wet process reaction train, said acid having a P_2O_5 content of 22–45 weight percent and having an Fe_2O_3/P_2O_5, weight ratio not in excess of 0.03;

(b) removing a suspended solids from the said acid in a clarification zone to provide a clarified acid having less than 2% by volume of suspended solids and a sludge-containing residue;

(c) evaporating the clarified acid to a P_2O_5 content of 46–52%;

(d) charging the evaporated acid to a crystallizing-settling zone to permit settling sludge from the acid, and settling for at least 8 hours;

(e) passing substantially sludge-free acid from the crystallizing-settling zone to an evaporating zone, and evaporating said acid to a P_2O_5 content of 56–62%, said acid characterized in that ammoniation is possible without substantial foaming.

4,364,913

HNCO MANUFACTURE BY ADIABATIC AIR OXIDATION OF HCN

Daniel S. Katz, Stamford, and Kenneth E. Olson, Riverside, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed September 24, 1981, Ser. No. 305,057
Int. Cl.[3] C01C *3/14*
U.S. Cl. 423—365 8 Claims

1. A process for oxidation of hydrogen cyanide to isocyanic acid which comprises passing a gas feed stream of hydrogen cyanide, oxygen and inert gas under adiabatic conditions in contact with a solid catalyst effective to promote the reaction of hydrogen cyanide and oxygen to form isocyanic acid, the proportion of oxygen being at least one-half mole per mole of hydrogen cyanide, the reaction temperature at the catalyst being about 500°–700° C., and said temperature being controlled by the proportion of inert gas in said gas feed stream.

4,364,914

PROCESS FOR THE MANUFACTURE OF POTASSIUM NITRATE WITH CO-PRODUCTION OF HYDROCHLORIC ACID

Shalom Manor, Haifa; Moshe Bar-Guri, Kfar Hasidim; Amiad Alexandron, and Moshe Kreisel, both of Haifa, all of Israel, assignors to Haifa Chemicals Ltd., Haifa, Israel

Filed March 31, 1981, Ser. No. 249,677
Claims priority, application Israel, April 30, 1980, 59952
Int. Cl.[3] C01D *9/04*
U.S. Cl. 423—399 9 Claims

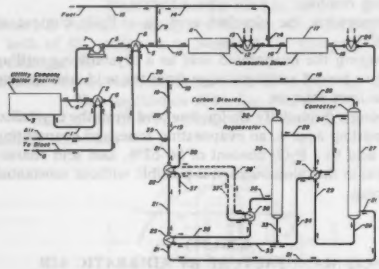
1. A process for the manufacture of potassium nitrate by reacting potassium chloride and nitric acid which comprises the performance of said reaction in the medium of an organic

solvent selected from butanols and pentanols, the ratio between said reactants being in the range of 0.9 mole of HNO_3 per one mole of KCl up to 3 moles of HNO_3 to one mole of KCl, separating the potassium nitrate, while the liquid phase removed consists of an aqueous solution and organic solvent extract containing hydrochloric acid and nitric acid, washing the solvent extract in obtaining a hydrochloric acid containing nitric acid, the improvement consisting in that said solution of hydrochloric acid and nitric acid is contacted with an organic solvent selected from organic esters of phosphoric acid, ketones having five to ten carbon atoms and straight or cyclic polyethers having molecular weight in the range of 100 to 1000, and polyalkylene glycols slightly miscible in water and having molecular weight in the range of 1000 to 3000, or mixtures thereof, preferably in the presence of an organic diluent, whereby said organic solvent extracts selectively the nitric acid leaving a relatively concentrated aqueous solution of hydrochloric acid substantially nitrate-free.

4,364,915
PROCESS FOR RECOVERY OF CARBON DIOXIDE FROM FLUE GAS

Russell C. Proctor, Missouri City, Tex., assignor to Procon International Inc., Des Plaines, Ill.

Filed May 21, 1981, Ser. No. 265,768
Int. Cl.³ C01B *31/20*; B01D *53/34*
U.S. Cl. 423—437 25 Claims



1. A process for recovering carbon dioxide from a flue gas stream which comprises the steps of:
(a) admixing a combustible fuel into a flue gas stream;
(b) passing the flue gas stream through a combustion zone in which the combustible fuel is reacted with oxygen originally present in the flue gas stream;
(c) cooling the flue gas stream;
(d) contacting the flue gas stream with a lean absorber liquid comprising an aqueous amine solution which absorbs carbon dioxide at carbon dioxide absorbing conditions in a contacting zone; and,
(e) recovering carbon dioxide from the absorber liquid.

4,364,916
PROCESS FOR THE PRODUCTION OF STABILIZED ACRYLIC FIBERS WHICH ARE PARTICULARLY SUITED FOR THERMAL CONVERSION TO CARBON FIBERS

Ilmar L. Kalnin, Millington; George J. Breckenridge, Jr., Clark; Andrew H. DiEdwardo, Parsippany, and John M. Rhodes, Summit, all of N.J., assignors to Celanese Corporation, New York, N.Y.

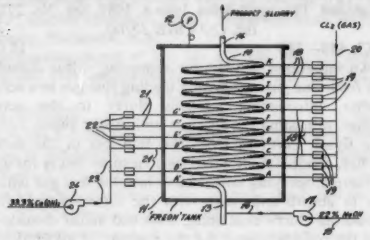
Filed October 14, 1981, Ser. No. 311,131
Int. Cl.³ D01F *9/22*
U.S. Cl. 423—447.6 22 Claims

1. An improved process for the relatively rapid thermal stabilization of a multifilamentary acrylic fibrous material in the substantial absence of filament coalescence comprising:
(a) contacting said acrylic fibrous material with a dilute solution of hydroxylamine having a pH of approximately 6 to 8 provided at a temperature of approximately 95° to 130° C.,
(b) washing said fibrous material,
(c) contacting said resulting fibrous material with a dilute solution of an oxidizing agent selected from the group consisting of ammonium permanganate, calcium permanganate, magnesium permanganate, and mixtures thereof, provided at a temperature of approximately 80° to 120° C.,
(d) washing said fibrous material, and
(e) heating said resulting fibrous material in a gaseous oxygen-containing atmosphere until a thermally stabilized acrylic fibrous material is formed which is capable of undergoing carbonization and is non-burning when subjected to an ordinary match flame.

4,364,917
CONTINUOUS PROCESS FOR MAKING CALCIUM HYPOCHLORITE

Herman H. Tiedemann, Texas City, Tex.; Gilbert Thibault, Coquitlam, and Joseph G. J. Laberge, Oakville, both of Canada, assignors to C-I-L Inc., North York, Canada

Filed 1982, Ser. No. 352,543
Claims priority, application Canada, Mar. 9, 1981, 372583
Int. Cl.³ C01B *11/06*
U.S. Cl. 423—474 4 Claims



1. A process for the continuous preparation of calcium hypochlorite slurry which comprises:
(a) continuously feeding an aqueous solution of sodium hydroxide to one end of a stirred tubular reactor;
(b) at each one of a number of injection sites axially spaced along the length of the tubular reactor continuously and separately injecting chlorine and an aqueous slurry of calcium hydroxide at such rates and molar ratio to each other that the redox potential of the resulting reaction mixture at any one injection site remains constant at a value not lower than that at the immediately preceding injection site, said rates of injection and molar ratio being such at the last injection site that the redox potential of the reaction mixture at that site is in the range from 900 to 950 mV; and
(c) removing the produced slurry of calcium hypochlorite from the other end of the tubular reactor; the temperature of the reaction mixture throughout the process being maintained within the range from 10° C. to 30° C.

4,364,918
SEPARATION OF THIOSULFATE FROM STRETFORD SOLUTION

Wilton F. Espenscheid, De Soto, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed March 5, 1979, Ser. No. 17,636
Int. Cl.³ C01B *17/04*
U.S. Cl. 423—573 R 1 Claim

1. In the process of purifying a hydrogen sulfide contaminated gas by indirectly oxidizing the hydrogen sulfide with oxygen gas to form elemental sulfur and purified gas, which process comprises recycling a reactive, regenerable aqueous

sorbent comprising sodium salts of anthraquinone disulfonic acid and an oxyanion of vanadium as means for effecting said indirect oxidation, and wherein a stream of said recycled aqueous sorbent containing thiosulfate is purged; the improvement comprising removing thiosulfate from said purge stream by:

(a) treating said purge stream with a nickel ethylenediamine complex forming a precipitate of insoluble nickel ethylenediamine thiosulfate without precipitation of anthraquinone disulfonic acid or vanadate;

(b) separating said aqueous sorbent from said insoluble precipitate and returning said sorbent to said recycling step;

(c) acidifying said precipitate with sulfuric or phosphoric acid whereby decomposing thiosulfate;

(d) alkalizing the acidified precipitate whereby forming a precipitate of insoluble salts;

(e) recovering a regenerated nickel ethylenediamine complex; and

(f) recycling the regenerated nickel ethylenediamine complex to be used in treating said purge stream.

4,364,919

PROCESS FOR PRODUCING COARSE GRAINS OF ALUMINUM HYDROXIDE

Koichi Yamada; Takuo Harato; Hisakatsu Kato, and Yasumi Shiozaki, all of Niihama, Japan, assignors to Sumitomo Aluminium Smelting Company, Limited, Osaka, Japan

Filed 1982, Ser. No. 347,546

Claims priority, application Japan, 1981, 56-24780

Int. Cl.³ C01F *7/14*

U.S. Cl. 423—629 **3 Claims**

1. A process for producing coarse grains of aluminum hydroxide by continuously precipitating coarse grains of aluminum hydroxide from a supersaturated sodium aluminate solution of the Bayer process, which comprises:

(1) a first precipitation step of adding recycle seed aluminum hydroxide to a supersaturated sodium aluminate solution having a molar ratio of Na_2O as caustic soda to Al_2O_3 in solution of less than 1.8 supplied to a precipitation tank of substantially complete mixing type in a ratio of 30–150 kg of the recycle seed to 1 m^3 of the solution, thereby partially decomposing the seed-added solution until the molar ratio of the solution reaches 2.0–2.4 while keeping the solution at 65°–80° C.;

(2) a second precipitation step of supplying the resulting sodium aluminate solution in a slurry state from the first precipitation step to at most three precipitation tanks of growth type arranged in series and decomposing the solution in the slurry state until the molar ratio reaches at least 2.6 while keeping the solution in the slurry state at a precipitated solid aluminum hydroxide concentration of 400–1,500 g/l and at a slurry temperature of 45°–65° C. in the precipitation tanks of growth type; and

(3) a third step of supplying the decomposed solution in a slurry state from the second precipitation step to a classifier, thereby classifying the precipitated aluminum hydroxide grains into coarse grains of aluminum hydroxide as product and fine grains of aluminum hydroxide, and recycling the fine grains of aluminum hydroxide as seed.

4,364,920

STABLE DIAGNOSTIC REAGENTS

Harry S. Winchell, Lafayette, Calif., assignor to Medi-Physics, Inc., Emeryville, Calif.

Filed April 30, 1975, Ser. No. 573,297

Int. Cl.³ A61K *49/00, 43/00*

U.S. Cl. 424—1 **14 Claims**

1. A method of stabilizing a reagent suitable for the preparation of a radiopharmaceutical by the addition thereto of a radionuclide, said reagent comprised of a chelating agent and stannous ion comprising adding to said chelate from about 1 mole to about 100 moles of a substance selected from the group consisting of ascorbic acid, erythorbic acid, pharmaceutically acceptable inorganic salts thereof and mixtures thereof for each mole of stannous ion.

4,364,921

NOVEL TRIIODINATED ISOPHTHALIC ACID DIAMIDES AS NONIONIC X-RAY CONTRAST MEDIA

Ulrich Speck; Peter Blaszkiewicz; Dieter Seidelmann, and Erich Klieger, all of Berlin, Fed. Rep. of Germany, assignors to Schering, Aktiengesellschaft, Berlin & Bergkamen, Fed. Rep. of Germany

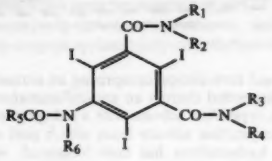
Filed March 6, 1980, Ser. No. 127,613

Claims priority, application Fed. Rep. of Germany, March 8, 1979, 2909439

Int. Cl.³ A61K *49/04*; C07H *3/00*; C07C *103/78*

U.S. Cl. 424—5 **15 Claims**

1. A triiodinated isophthalic acid diamide of the formula



wherein

the amide residues —CO—N.R_1R_2 and —CO—N.R_3R_4 are different from each other and

R_1 is hydrogen or C_{1-6} alkyl,

R_2 is mono- or polyhydroxyalkyl,

R_3 is hydrogen or C_{1-6} alkyl,

R_4 is mono- or polyhydroxyalkyl,

R_5 is C_{1-6} alkyl or monohydroxy-C_{1-6}-alkyl or C_{1-3}-alkoxy-C_{1-3}-alkyl, and

R_6 is hydrogen or C_{1-6} alkyl or mono-.

9. A method of conducting a radiological examination of a patient which comprises administering to the patient a radiopaque amount of a compound of claim 1.

4,364,922

ADENOSINE ANTAGONISTS IN THE TREATMENT AND DIAGNOSIS OF A-V NODE CONDUCTION DISTURBANCES

Robert M. Berne; Luiz Belardinelli, and Rafael Rubio, all of Charlottesville, Va., assignors to University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Filed October 14, 1980, Ser. No. 196,652

Int. Cl.³ A61K *49/00, 31/52, 31/46*

U.S. Cl. 424—9 **27 Claims**

1. A method of treating atrioventricular conduction block, comprising the steps of:

administering to a human or animal with an atrioventricular conduction block an amount of an antagonist of adenosine sufficient to alleviate atrioventricular conduction block, wherein said antagonist competitively inhibits adenosine or reduces the level of adenosine present in myocardial tissue and associated fluids.

22. A method of diagnosing atrioventricular conduction block, comprising the steps of:

administering an antagonist of adenosine to a human or other animal, wherein said antagonist competitively inhibits adenosine or reduces the levels of adenosine present in myocardial tissue and associated fluids; and

monitoring the delay between atrial and ventricular contraction.

4,364,923

CHEMICAL COMPOUNDS

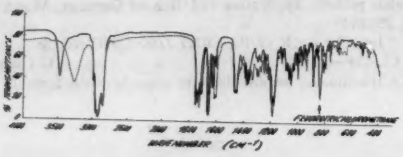
Peter B. Cook, Standon, and John H. Hunt, Theydon Bois, both of England, assignors to Allen & Hanburs Limited, London, England

Division of Ser. No. 805,910, Jun. 13, 1977, which is a division of Ser. No. 703,821, Jul. 9, 1976, Pat. No. 4,044,126, which is a continuation of Ser. No. 352,187, Apr. 18, 1973, abandoned. This application April 30, 1981, Ser. No. 259,015

Claims priority, application United Kingdom, April 20, 1972, 18421/72

Int. Cl.³ A61K *31/56*

U.S. Cl. 424—46 12 Claims



1. An aerosol formulation comprising an aerosol propellant containing suspended therein an anti-inflammatory steroid in the form of a crystalline solvate with a halogenated hydrocarbon or said crystalline solvate from which part or all of the halogenated hydrocarbon has been removed, wherein said halogenated hydrocarbon is a chloro or chlorofluoro hydrocarbon having 1 or 2 carbon atoms; said steroid being stabilized with respect to further growth in said aerosol propellant and the particle size of substantially all of said steroid material being such as to permit inhalation into the bronchial system when dispersed as an aerosol.

4,364,924

ALKALI METAL SALTS OF POLY(VINYLBENZOIC ACID) AS DENTAL PLAQUE BARRIER AGENTS

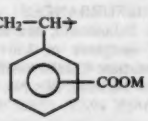
Robert J. Gander, Whitehouse; Carl J. Buck, Berkeley Heights, and Tibor Sipos, Lebanon, all of N.J., assignors to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed July 25, 1980, Ser. No. 172,495

Int. Cl.³ A61K *7/16, 31/74, 31/19;* C08F *30/04*

U.S. Cl. 424—49 4 Claims

1. An oral hygiene composition comprising an effective amount for preventing deposition of dental plaque or teeth of an alkali metal salt of a homopolymer of vinylbenzoic acid having repeating units of structure (A),



(A)

wherein M is selected from the group consisting of lithium, sodium, and potassium, in a pharmaceutically acceptable oral hygiene vehicle compatible with said polymer.

4,364,925

UNITIZED ANIMAL FOOD SYSTEM PRODUCT

Stanton E. Fisher, c/o Items, Incorporated, 3960 Olive St., St. Louis, Mo. 63108

Continuation-in-part of Ser. No. 117,081, Feb. 19, 1971, abandoned, Ser. No. 221,035, Jan. 26, 1972, abandoned, Ser. No. 242,428, Apr. 10, 1972, abandoned, and Ser. No. 534,064, Dec. 18, 1974, Pat. No. 4,260,635. This application March 11, 1975, Ser. No. 557,248

Int. Cl.³ A23G *1/00;* A23K *1/18;* A61K *7/28*

U.S. Cl. 424—50 5 Claims

1. A simultaneously compacted, shaped, molded and unitized, self-contained, unit integral chew-resistant multilayer animal food system product containing (A) at least one chew-resistant layer with animal food as a part thereof and at least one lesser chew resistant layer with animal food as a part thereof, said latter layer being less chew-resistant than said former layer, the chew resistance of each of said layer being primarily controlled by the relative presence or absence of structure supporting fibers selected from the group consisting of (1) animal safely digestible structure-supporting fibers, said animal safely digestible structure-supporting fibers being derived from animal skins or hides in fibrous form, (2) animal safely indigestible structure-supporting fibers, and (3) a mixture of said animal safely digestible structure-supporting fibers and animal safely indigestible structure-supporting fibers, and, in one or both of said layers, (B) an enzyme selected from the group consisting of (1) an enzyme capable of removing plaque from the animal's teeth, (2) a mixture of enzymes capable capable of removing plaque from the animal's teeth, (3) an enzyme capable of removing tartar from the animal's teeth, (4) a mixture of enzymes capable of removing tartar from the animal's teeth and (5) any combination of two or more of (1), (2), (3) and (4), said structure supporting fibers being present in said animal food system product in said latter layer and in said former second layer or in said latter layer or in said former layer in amounts or in an amount sufficient to make said animal food system product chew-resistant, self-contained and unit integral and to enable it to be and remain in its compacted, shaped and molded form, and wherein each of the layers contains structure-supporting fibers which are animal safely digestible structure-supporting fibers derived from animal skins or hides.

4,364,926

NOVEL ALKALINE PROTEASE M_3 METHOD FOR THE PREPARATION THEREOF AND DENTAL CARIES-PROPHYLACTIC COMPOSITION CONTAINING THE SAME

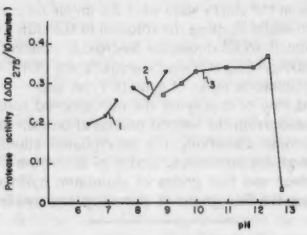
Kanae Yokogawa, Nara; Takeshi Yamamoto, Takatsuki; Yoshiyuki Takase, Amagasaki; Hiromi Katae, Kawachinagano, and Shigeo Kawata, Kobe, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed 1981, Ser. No. 225,266

Claims priority, application Japan, 1980, 55-007557

Int. Cl.³ C12N *9/50, 9/52;* A61K *7/28*

U.S. Cl. 424—50 6 Claims



1. Alkaline protease M_3 which has the following chemical and physical properties:

(1) Activities: It can hydrolyze casein and inhibits the activity of glucosyltransferase.

(2) Optimum pH and pH stability: It has an optimum pH range of 9 to 12.5 (substrate: casein), and when it it kept in a buffer solution (pH 4–9) at 37° C. for 6 days, about 50% or more of the protease activity is remained.

(3) Optimum temperature and heat stability: It has an optimum temperature of about 65° C. (substrate: casein), and even when an aqueous solution of this enzyme is heated at 55° C. for minutes, it is stable.

(4) Conditions for inactivation: When an aqueous solution of this enzyme is heated at 60° C. for 10 minutes, about 50% of the protease activity is lost, and when the aqueous solution is heated at 65° for 10 minutes, 90% or more of the activity is lost

(5) Effects of various additives: The protease activity of this enzyme is completely inhibited by 10^{-4}M of N-bromosuccinimde, but is almost not inhibited by 10^{-3}M of iodoacetic acid, diisopropyl fluorophosphate, ethylenediamine tetraacetate, and $FeSO_4$.

(6) Isoelectric point: about pH 9.5

(7) Molecular weight: about 1.7×10^4.

5. A composition for prevention of dental caries comprising alkaline protease M_3 of claim 1 in admixture with conventional carrier of diluent.

4,364,927

SULFONATED NAPHTHALENE FORMALDEHYDE CONDENSATION POLYMERS AS DENTAL PLAQUE BARRIERS

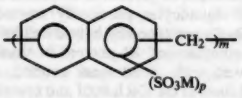
Tibor Sipos, Lebanon, and Henry F. Motkowski, Jr., Hamilton Square, both of N.J., assignors to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed July 25, 1980, Ser. No. 172,351

Int. Cl.[3] A61K *7/16, 31/185, 31/765, 31/775*

U.S. Cl. 424—56 8 Claims

1. An oral hygiene composition comprising an effective amount for preventing deposition of dental plaque on teeth of a sulfonated condensation polymer of formaldehyde with naphthalene, said polymer having repeating units of structure:



wherein M is selected from the group consisting of lithium, sodium, potassium, calcium, magnesium, zinc, aluminum, hydrogen, ammonium, and substituted ammonium ions derived from pharmaceutically acceptable organic amines, and p has an average value in the range of from about 0.4 to about 1.4, said polymer having a molecular weight in the range of from about 500 to about 5,000, in a pharmaceutically acceptable oral hygiene vehicle compatible with said polymer.

4,364,928

NOVEL SALTS OF ION EXCHANGE RESINS OF THE ACID TYPE

Jacques Martel, Bondy; Jean Tessier, Vincennes; Pierre Girault, Paris, and Jean A. Grandadam, Saint-Maur des Fosses, all of France, assignors to Roussel-Uclaf, Paris, France

Filed October 7, 1980, Ser. No. 194,907

Claims priority, application France, October 23, 1979, 79 26221; Japan, 1980, 55-9464

Int. Cl.[3] B01J *39/20;* A61K *31/74*

U.S. Cl. 424—79 41 Claims

1. An ion exchange resin of the acid type at least partially salified with 7-bromo-6-chloro-febrifugin.

4,364,929

GERMICIDAL COLLOIDAL LUBRICATING GELS AND METHOD OF PRODUCING THE SAME

Ernest J. Sasmor, Yonkers, N.Y., and Kenneth G. Rothwell, Easton, Conn., assignors to The Purdue Frederick Company, New York, N.Y.

Continuation of Ser. No. 26,401, Apr. 2, 1979, abandoned, which is a continuation of Ser. No. 949,378, Oct. 6, 1978, abandoned. This application April 30, 1980, Ser. No. 145,232

Int. Cl.[3] A61K *31/79, 33/18, 31/74;* H01B *1/06*

U.S. Cl. 424—80 4 Claims

1. An aqueous germicidal colloidal lubricating gel, comprising water, 0.05–2% by weight iodine, 0.5–7.5% by weight of a physiologically compatible gel-forming colloid selected from the group consisting of methylcellulose, carboxymethylcellulose, hydroxyalkylcellulose, gum karaya, alginic acid, glycol esters of alginic acid, gum guar, pslyllium, acacia and tragacanth, an iodophor-former selected from the group consisting of 0.5–2 parts by weight per part of said colloid of polyvinylpyrrolidone and 0.3–4 parts by weight per part of said colloid of nonylphenoxypoly-(ethyleneoxy)-ethanol and polyoxypropylenepoly-(oxy-propylene) poly-oxyethylene copolymers.

4,364,930

COSMETIC OR PHARMACEUTICAL COMPOSITIONS IN THE FORM OF STABLE OIL-IN-WATER EMULSIONS

Jacqueline Griat, Ablon; Arlette Zabotto, and Constantin Koulbanis, both of Paris, all of France, assignors to Societe Anonyme dite: L'OREAL, Paris, France

Filed March 18, 1981, Ser. No. 245,207

Claims priority, application France, March 24, 1980, 80 06468

Int. Cl.[3] A61K *31/78, 35/12, 7/42, 7/021*

U.S. Cl. 424—81 7 Claims

1. An oil-in-water emulsion comprising 15 to 60 percent by weight of an oil phase, 40 to 85 percent by weight of an aqueous phase and an effective amount of an emulsifying agent, said emulsifying agent comprising

(i) a mixture of (1) an alkyl carboxylate of α-methyl glucoside, wherein the alkyl carboxylate moiety is selected from the group consisting of mono-laurate, di-laurate, mono-palmitate, di-palmitate, mono-stearate and di-stearate, or a mixture of said alkyl carboxylates of α-methyl glucoside and (2) an alkyl carboxylate of α-methyl glucoside polyoxyethylenated with 10–30 moles of ethylene oxide wherein the alkyl carboxylate moiety is selected from the group consisting of mono-laurate, di-laurate, mono-palmitate, di-palmitate, mono-stearate and di-stearate, or a mixture of said polyoxyethylenated alkyl carboxylates of α-methyl glucoside, the weight ratio of (1) to (2) ranging from 40–60:60–40, said mixture of (1) and (2) being present in an amount of about 3 to 15 percent by weight based on the total weight of said emulsion,

(ii) vegetable lecithin or egg lecithin, present in an amount of about 0.03 to 1.2 percent by weight based on the total weight of said emulsion,

(iii) egg yolk oil present in an amount of about 0.3 to 4 percent by weight based on the total weight of said emulsion, and

(iv) a water soluble acrylic acid polymer present in an amount of about 0.1 to 0.5 percent by weight based on the total weight of said emulsion.

4,364,931

COMPOSITE INSECT ATTRACTANT FOR MALE WHITE-LINE DART MOTHS AND A PROCESS FOR PREPARING THE ACTIVE INGREDIENTS THEREOF

Csaba Szantay; Lajos Novak; Miklós Tóth, all of Budapest, Jozsef Jakab, Gyöngyös; Attila Kis-Tamás, Budapest; Istrán Ujvári, Budapest; Ferenc Jurák, Budapest, all of Hungary, assignors to Egypt Gyogyszervegyeszeti Gyar, Budapest, Hungary

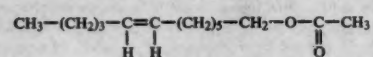
Filed December 24, 1980, Ser. No. 220,113

Claims priority, application Hungary, December 29, 1979, EE-2721

Int. Cl.³ A01N *17/14*

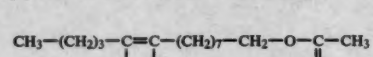
U.S. Cl. 424—84 **6 Claims**

1. A composite insect attractant for male white-line dart moths, containing 7(Z)-dodecen-1-ol acetate of the formula I



(I)

and 9(Z)-tetradecen-1-ol acetate of the formula II



(II)

in a weight ratio of 50 to 99:50 to 1 as active ingredients.

4. A process for disrupting the mating of white-line dart moths, which comprises emitting into the atmosphere a combination of 7(Z)-dodecen-1-ol acetate and 9(Z)-tetradecen-1-ol acetate in a weight ratio of 50 to 99:50 to 1 with a speed of 5.0–30 mg/hectare/hour.

4,364,932

MONOCLONAL ANTIBODY TO HUMAN CYTOTOXIC AND SUPPRESSOR T CELLS AND METHODS OF PREPARING SAME

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation-in-part of Ser. No. 76,642, Sep. 18, 1979, abandoned. This application October 9, 1979, Ser. No. 82,515

Int. Cl.³ A61K *39/395*; C12N *5/00, 5/02, 15/00*; C12Q *1/00*; G01N *33/48, 33/68, 33/96*

U.S. Cl. 424—85 **11 Claims**

1. A monoclonal antibody of class IgG produced by a hybridoma formed by fusion of cells from a mouse myeloma line and spleen cells from a mouse previously immunized with human thymocytes, which antibody:

(a) reacts with greater than 90% of cytotoxic and suppressor TH_2^+ T cells (being about 20-30% of all normal human peripheral T cells), but not with normal human peripheral B cells, Null cells or macrophages;

(b) reacts with about 80% of normal human thymocytes;

(c) does not react with TH_2^- T cells or T cells which also react with antibody produced by hybrid cell line ATCC CRL 8002, but reacts with about 68% of T cells which do not react with antibody produced by hybrid cell line ATCC CRL 8002;

(d) defines a T cell population which is strongly cytotoxic and which is lower than normal levels in primary biliary cirrhosis, multiple sclerosis, and hyper IgE, normal levels in all stages of Hodgkins disease, and higher than normal levels in Type I acquired agammaglobulinemia and acute infectious mononucleosis.

5. Mouse monoclonal antibody which reacts with greater than 90% of cytotoxic and suppressor TH_2^+ human T cells but not with normal human peripheral B cells, null cells, or macrophages.

6. A monoclonal antibody which reacts with greater than 90% of cytotoxic and suppressor TH_2^+ human T cells but not with normal human peripheral B cells, null cells, or macrophages prepared by the method, which comprises the steps of:

(i) immunizing mice with normal human thymocytes;

(ii) removing the spleens from said mice and making a suspension of the spleen cells;

(iii) fusing said spleen cells with mouse myeloma cells in the presence of a fusion promoter;

(iv) diluting and culturing the fused cells in separate wells in a medium which will not support the unfused myeloma cells;

(v) evaluating the supernatant in each well containing a hybridoma for the presence of antibody to E rosette positive purified T cells;

(vi) selecting and cloning a hybridoma producing antibody which reacts with greater than 90% of cytotoxic and suppressor TH_2^+ human T cells but not with normal human peripheral B cells, null cells, or macrophages; and

(vii) recovering the antibody from the supernatant above said clones.

4,364,933

MONOCLONAL ANTIBODY TO A HUMAN THYMOCYTE ANTIGEN AND METHODS OF PREPARING SAME

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed December 4, 1979, Ser. No. 99,970

Int. Cl.³ A61K *39/395*; C12N *5/00, 5/02, 15/00*; C12Q *1/00*; G01N *33/48, 33/68, 33/96*

U.S. Cl. 424—85 **11 Claims**

1. A monoclonal antibody of class IgG produced by a hybridoma formed by fusion of cells from a mouse myeloma line and spleen cells from a mouse previously immunized with human thymocytes, which antibody:

(a) reacts with approximately 70 percent of normal human thymocytes, but not with normal human peripheral T cells, B cells, Null cells, or bone marrow cells,

(b) reacts with about 65 percent of untreated thymocytes, 10 percent of thymocytes previously treated with monoclonal antibody produced by hybrid cell line ATCC CRL 8002 and complement, 82 percent of thymocytes previously treated with monoclonal antibody produced by hybrid cell line ATCC CRL 8001 and complement, and 13 percent of the thymocytes previously treated with monoclonal antibody produced by hybrid cell line ATCC CRL 8014 and complement;

(c) reacts with stage II T-cell ALL but not with stage I or stage III T-cell ALL;

(d) reacts with CEM and MOLT-4 cell lines but not with HSB-2 cell line; and

(e) defines a T cell population which is lower than normal levels in primary biliary cirrhosis, multiple sclerosis, and hyper IgE, higher than normal levels in acute graft versus host reaction, and completely absent in myasthenia gravis, acute infectious mononucleosis, all stages of Hodgkins disease, and psoriasis.

5. Mouse monoclonal antibody which reacts with approximately 70% of normal human thymocytes but not with normal human peripheral T cells, B cells, null cells, or bone marrow cells.

6. A monoclonal antibody which reacts with approximately 70% of normal human thymocytes but not with normal human peripheral T cells, B cells, null cells, or bone marrow cells, prepared by the method which comprises the steps of:

(i) immunizing mice with normal human thymocytes;

(ii) removing the spleens from said mice and making a suspension of the spleen cells;

(iii) fusing said spleen cells with mouse myeloma cells in the presence of a fusion promoter;

(iv) diluting and culturing the fused cells in separate wells in a medium which will not support the unfused myeloma cells;

(v) evaluating the supernatant in each well containing a hybridoma for the presence of antibody to E rosette positive purified T cells or human thymocytes;
(vi) selecting and cloning a hybridoma producing antibody which reacts with approximately 70% of normal human thymocytes but not with normal human peripheral T cells, B cells, null cells, or bone marrow cells; and
(vii) recovering the antibody from the supernatant above said clones.

4,364,934

MONOCLONAL ANTIBODY TO A HUMAN EARLY THYMOCYTE ANTIGEN AND METHODS FOR PREPARING SAME

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed December 4, 1979, Ser. No. 100,071
Int. Cl.[3] **A61K** *39/395;* **C12N** *5/00, 5/02, 15/00;* **C12Q** *1/00;* **G01N** *33/48, 33/68, 33/96*
U.S. Cl. 424—85 **11 Claims**

1. A monoclonal antibody of class IgG produced by a hybridoma formed by fusion of cells from mouse myeloma line and spleen cells from a mouse previously immunized with human leukemic T-ALL cells, which antibody:
(a) reacts with approximately 10 percent of normal human thymocytes, but not with normal human peripheral T cells, B cells, Null cells, or bone marrow cells,
(b) reacts with 8 percent of untreated thymocytes, 6 percent of thymocytes previously treated with monoclonal antibody produced by hybrid cell line ATCC CRL 8002 and complement, 12 percent of thymocytes previously treated with monoclonal antibody produced by hybrid cell line ATCC CRL 8001 and complement, and 5 percent of the thymocytes previously treated with monoclonal antibody produced by hybrid cell line ATCC CRL 8014 and complement;
(c) reacts with Early Thymocyte (Thy 2) Stage I and Common Thymocyte (Thy 3) Stage II T cell ALL Stages but not with Prothymocyte (Thy 1) Stage I, Common Thymocyte (Thy 4, Thy 3-4, or Thy 4-6) Stage II or Late Thymocyte (Thy 8) Stage III T cell ALL Stages;
(d) reacts with HSB-2, CEM and MOLT-4 cell lines; and
(e) defines a T cell antigen which appears on 30–50 percent of peripheral T cells after mitogen stimulation.

5. Mouse monoclonal antibody which reacts with approximately 10% of normal human thymocytes but not with normal human peripheral T cells, B cells, null cells, or bone marrow cells.

6. A monoclonal antibody which reacts with approximately 10% of normal human thymocytes but not with normal human peripheral T cells, B cells, null cells, or bone marrow cells, prepared by the method which comprises the steps of:
(i) immunizing mice with human leukemic T-ALL cells;
(ii) removing the spleens from said mice and making a suspension of the spleen cells;
(iii) fusing said spleen cells with mouse myeloma cells in the presence of a fusion promoter;
(iv) diluting and culturing the fused cells in separate wells in a medium which will not support the unfused myeloma cells;
(v) evaluating the supernatant in each well containing a hybridoma for the presence of antibody to E rosette positive purified T cells or human thymocytes;
(vi) selecting and cloning a hybridoma producing antibody which reacts with approximately 10% of normal human thymocytes but not with normal human peripheral T cells, B cells, null cells, or bone marrow cells; and
(vii) recovering the antibody from the supernatant above said clones.

4,364,935

MONOCLONAL ANTIBODY TO A HUMAN PROTHYMOCYTE ANTIGEN AND METHODS OF PREPARING SAME

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed December 4, 1979, Ser. No. 100,072
Int. Cl.[3] **A61K** *39/395;* **C12N** *5/00, 5/02, 15/00;* **C12Q** *1/00;* **G01N** *33/48, 33/68, 33/96*
U.S. Cl. 424—85 **11 Claims**

1. A monoclonal antibody of class IgG produced by a hybridoma formed by fusion of cells from mouse myeloma line and spleen cells from a mouse previously immunized with human leukemic T-ALL cells, which antibody:
(a) reacts with approximately 95 percent of normal human thymocytes, 5 percent of normal human peripheral T cells, 10 percent of E^-peripheral mononuclear cells (B cells and null cells), and 10–20 percent of bone marrow cells;
(b) reacts with 92 percent of untreated thymocytes, 75 percent of thymocytes previously treated with monoclonal antibody produced by hybrid cell line ATCC CRL 8002 and complement, 86 percent of thymocytes previously treated with monoclonal antibody produced by hybrid cell line ATCC CRL 8001 and complement, and 85 percent of the thymocytes previously treated with monoclonal antibody produced by hybrid cell line ATCC CRL 8014 and complement;
(c) is reactive with an antigen on leukemic T-ALL cells; and
(d) reacts with HSB-2, CEM and MOLT-4 cell lines.

5. Mouse monoclonal antibody which reacts with approximately 95% of normal human thymocytes, 5% of normal human peripheral T cells, 10% of E peripheral mononuclear cells (B cells and null cells) and 10–20% of bone marrow cells.

6. A monoclonal antibody which reacts with approximately 95% of normal human thymocytes, 5% of normal human peripheral T cells, 10% of E^-peripheral mononuclear cells (B cells and null cells) and 10–20% of bone marrow cells, prepared by the method which comprises the steps of:
(i) immunizing mice with human leukemic T-ALL cells;
(ii) removing the spleens from said mice and making a suspension of the spleen cells;
(iii) fusing said spleen cells with mouse myeloma cells in the presence of a fusion promoter;
(iv) diluting and culturing the fused cells in separate wells in a medium which will not support the unfused myeloma cells;
(v) evaluating the supernatant in each well containing a hybridoma for the presence of antibody to E rosette positive purified T cells or human thymocytes;
(vi) selecting and cloning a hybridoma producing antibody which reacts with approximately 95% of normal human thymocytes, 5% of normal human peripheral T cells, 10% of E^-peripheral mononuclear cells (B cells and null cells and 10–20% of bone marrow cells; and
(vii) recovering the antibody from the supernatant above said clones.

4,364,936

MONOCLONAL ANTIBODY TO A HUMAN MONOCYTE ANTIGEN AND METHODS OF PREPARING SAME

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed 1980, Ser. No. 110,509
Int. Cl.[3] **A61K** *39/395;* **C12N** *5/00, 5/02, 15/00;* **C12Q** *1/00;* **G01N** *33/48, 33/68, 33/96*
U.S. Cl. 424—85 **11 Claims**

1. A monoclonal antibody of class IgG produced by a hybridoma formed by fusion of cells from a mouse myeloma line and spleen cells from a mouse previously immunized with human mononuclear cells, which antibody:
(a) reacts with an antigen found on normal human monocytes and granulocytes, but not with normal human pe-

ripheral T cells, B cells, Null cells, thymocytes, lymphoblastoid cell lines, or tumor cells of T or B cell lineage;

(b) reacts with about 27% of unfractionated, about 18% of nonadherent, and about 78% of adherent human peripheral blood mononuclear cells;

(c) reacts with about 13.5% of E rosette positive and about 57.5% of E rosette negative human peripheral lymphocytes;

(d) reacts with about 84% of normal human Ig^-, E^-, nonadherent null cells;

(e) reacts with leukemia cells from patients with acute myelomonocytic leukemia;

(f) defines a monocyte population necessary for a proliferative response to soluble antigens;

(g) defines a monocyte population which is lower than normal levels in primary biliary cirrhosis, acute infectious mononucleosis, and graft versus host reaction, higher than normal levels in multiple sclerosis, myasthemia gravis, and abnormal Hodgkins disease, and normal levels in hyper IgE, early Hodgkins disease, and psoriasis.

5. Mouse monoclonal antibody which reacts with an antigen found on normal human monocytes and granulocytes, but not with normal human peripheral T cells, B cells, Null cells, thymocytes, lymphoblastoid cell lines, or tumor cells of T or B cell lineage.

6. A monoclonal antibody which reacts with an antigen found on normal human monocytes and granulocytes, but not with normal human peripheral T cells, B cells, Null cells, thymocytes, lymphoblastoid cell lines, or tumor cells of T or B cell lineage prepared by the method, which comprises the steps of:

(i) immunizing mice with human mononuclear cells;

(ii) removing the spleens from said mice and making a suspension of the spleen cells;

(iii) fusing said spleen cells with mouse myeloma cells in the presence of a fusion promoter;

(iv) diluting and culturing the fused cells in separate wells in a medium which will not support the unfused myeloma cells;

(v) evaluating the supernatant in each well containing a hybridoma for the presence of antibody to E^+ and E^- human peripheral blood lymphocytes;

(vi) selecting and cloning a hybridoma producing antibody which reacts with an antigen found on normal human monocytes and granulocytes, but not with normal human peripheral T cells, B cells, Null cells, thymocytes, lymphoblastoid cell lines, or tumor cells of T or B cell lineage; and

(vii) recovering the antibody from the supernatant above said clones.

4,364,937

MONOCLONAL ANTIBODY TO A HUMAN T CELL ANTIGEN AND METHODS OF PREPARING SAME

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed 1980, Ser. No. 110,510

Int. Cl.[3] A61K *39/395;* **C12N** *5/00, 5/02, 15/00;* **C12Q** *1/00;* **G01N** *33/48, 33/68, 33/96*

U.S. Cl. 424—85 **11 Claims**

1. A monoclonal antibody of class IgG produced by a hybridoma formed by fusion of cells from a mouse myeloma line and spleen cells from a mouse previously immunized with leukemic cells from a human with T-ALL, which antibody:

(a) reacts with essentially all normal human peripheral T cells and with approximately 95% of normal human thymocytes, but not with normal human B cells or Null cells;

(b) reacts with early, common, and mature human thymocytes and with inducer and cytotoxic/suppressor human T cells, but not with human prothymocytes;

(c) defines a T cell population which is lower than normal levels in myasthenia gravis and multiple sclerosis; higher than normal levels in acute graft versus host reaction, hyper IgE, acute infectious mononucleosis, and primary biliary cirrhosis; and completely absent in all stages of Hodgkins disease and psoriasis.

5. Mouse monoclonal antibody which reacts with essentially all normal human peripheral T cells and with approximately 95% of normal human thymocytes, but not with normal human B cells or Null cells.

6. A monoclonal antibody which reacts with essentially all normal human peripheral T cells and with approximately 95% of normal human thymocytes but not with normal human B cells or Null cells prepared by the method, which comprises the steps of:

(i) immunizing mice with human leukemic T-ALL cells;

(ii) removing the spleens from said mice and making a suspension of the spleen cells;

(iii) fusing said spleen cells with mouse myeloma cells in the presence of a fusion promoter;

(iv) diluting and culturing the fused cells in separate wells in a medium which will not support the unfused myeloma cells;

(v) evaluating the supernatant in each well containing a hybridoma for the presence of antibody to E rosette positive purified T cells or human thymocytes;

(vi) selecting and cloning a hybridoma producing antibody which reacts with essentially all normal human peripheral T cells and with approximately 95% of normal human thymocytes, but not with normal human B cells or Null cells; and

(vii) recovering the antibody from the supernatant above said clones.

4,364,938

PRODUCTION OF IMMUNOGENIC PRODUCTS AND TREATMENT OF ALLERGIC REACTIONS THEREWITH

Gijsberk T. Hoek, Parklaan 81, Haarlem, Netherlands (2001HB)

Filed 1981, Ser. No. 234,303

Int. Cl.[3] A61K *39/35, 39/36*

U.S. Cl. 424—88 **7 Claims**

1. A method of preparing an immunogenic product useful in the therapeutic treatment of patients suffering from allergic conditions, and which product possesses reduced allergenic properties, which comprises extracting an allergenic product by treatment thereof with a suitable solvent selected from the group consisting of water, alcohol, glycerol, dimethyl sulfoxide and phenol, in which the allergens to be extracted are soluble, until most of the soluble allergens contained in said allergenic product are extracted therefrom, discarding the solute thus obtained, and recovering the extracted residue thereof which contains no more than 1:100 w/w of its original allergen content, to yield the desired immunogenic product.

6. A method of preparing an immunogenic product useful in the therapeutic treatment of patients suffering from allergic conditions, and which product possess reduced allergenic properties, which comprises extracting an allergenic product by treatment thereof with a suitable solvent until most of the soluble antigens contained therein are extracted therefrom, discarding the solute thus obtained, recovering the extracted residue thereof which contains no more than 1:100 w/w of its original allergen content, and further treating said extracted residue with β-propiolactone, the weight ratio of β-propiolactone to said residue being between 1:1 and 1:100, and removing all said β-propiolactone to yield the desired final product.

4,364,939
DERIVATIVES OF COENZYME B_{12}

Denise Autissier, Paris, and Pierre Barthelemy, Barbery, both of France, assignors to Roussel Uclaf, Paris, France

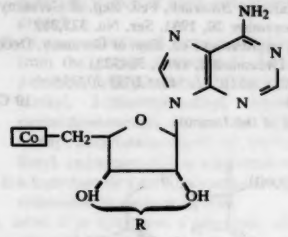
Continuation-in-part of Ser. No. 38,774, May 14, 1979, abandoned, which is a continuation of Ser. No. 852,036, Nov. 16, 1977, abandoned. This application September 15, 1980, Ser. No. 186,831

Claims priority, application France, November 25, 1976, 76 35533

Int. Cl.³ A61K *31/52*; C07H *19/18*

U.S. Cl. 424—180 14 Claims

1. A compound of the formula:



wherein R is acyl of an aliphatic carboxylic acid of 4 to 20 carbon atoms and Co is α-(5,6-dimethyl-benzimidazolyl)-cobamide.

4,364,940
COMPOSITIONS FOR TREATING ACNE

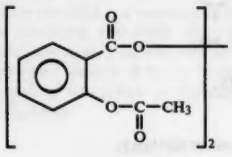
Edward S. Neiss, New Canaan, Conn., and Bernard Loev, Scarsdale, N.Y., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed 1981, Ser. No. 237,234

Int. Cl.³ A61K *31/60*

U.S. Cl. 424—230 2 Claims

1. A composition for the topical treatment of acne in the form of a lotion or cream containing from about 1 to 10% by weight of a compound of the formula



4,364,941
METHOD FOR REGULATING BONE METABOLISM OF WARM-BLOODED ANIMALS, AND PHARMACEUTICAL COMPOSITIONS THEREOF

Mamoru Kiyoki, Ohme; Hiroyoshi Endo, Kanagawa; Tatsuyuki Naruchi, Hino, and Yoshinobu Hashimoto, Fujisawa, all of Japan, assignors to Teijin Limited, Osaka and Teijin Pharmaceutical Co., Ltd., Tokyo, both of, Japan

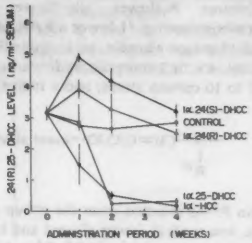
Continuation of Ser. No. 137,755, Apr. 7, 1980, abandoned. This application August 31, 1981, Ser. No. 297,975

Claims priority, application Japan, April 10, 1979, 54-42447

Int. Cl.³ A61K *31/59*

U.S. Cl. 424—236 13 Claims

1. A method for regulating the bone metabolism of a warm-blooded animal, which comprises administering pharmaceutically effective amounts of 1α,24-dihydroxycholecalciferol and 24,25-dihydroxycholecalciferol to the warm-blooded animal, said amount being sufficient to bring abnormal bone metabolism to a normal bone metabolism or to maintain normal bone metabolism.



4,364,942
2,3-DIHYDRO-IMIDAZO (2,1-B)BENZOTHIAZOLES COMPOSITIONS USEFUL AS ANTI-PARKINSONISM AGENTS

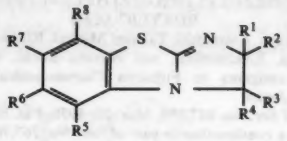
Victor Sipido, Merksem, Belgium, assignor to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 50,734, Jun. 21, 1979, Pat. No. 4,262,004. This application March 30, 1981, Ser. No. 248,757

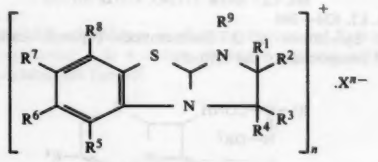
Int. Cl.³ A61K *31/425*; C07D *277/60*

U.S. Cl. 424—245 3 Claims

1. A composition to treat Parkinsonism, comprising an inert carrier and, as an active ingredient, an amount, which is effective to treat Parkinsonism, of a compound selected from the group consisting of a 2,3-dihydroimidazo[2,1-b]benzothiazole which may structurally be represented by the formula



and the pharmaceutically acceptable acid addition salts thereof, the pharmaceutically acceptable imidazo[2,1-b]benzothiazolium salts of formula



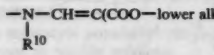
and metal salt complexes thereof with a transition metal salt, wherein:

R^1 and R^3 are each independently selected from the group consisting of hydrogen and lower alkyl;

R^2 and R^4 are each independently selected from the group consisting of hydrogen, lower alkyl, aryl, aryl-lower alkyl, lower alkyloxy-lower alkyl or aryloxy-lower alkyl;

R^5, R^6, R^7 and R^8 are each independently selected from the group consisting of hydrogen; halo; nitro; alkyl having from 1 to 20 carbon atoms; cycloalkyl having from 3 to 6 carbon atoms; hydroxy; lower alkyloxy; aryloxy; α-hydroxy-arylmethyl; amino; mono- and dialkyl-amino; mono-, di- and trihalo-lower alkylamino; lower alkenylamino; lower alkynylamino; (aryllower alkyl)amino;

(lower alkyloxy-lower alkyl)amino; (hydroxy-lower alkyl)amino; (aryloxy-lower alkyl)amino; [mono- and di(-lower alkyl)amino-lower alkyl]amino; lower alkanoylamino; N-(lower alkyl)lower alkanoylamino; aminocarbonylamino; (1-lower alkyl-4-piperidinyl)amino; cycloalkylamino wherein said cycloalkyl represents a mino-, bi-, tri- or tetracyclic hydrocarbon radical having from 3 to 10 carbon atoms; and a radical of the formula



wherein R^{10} is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl and lower alkynyl; or, when taken together R^5 and R^6, R^6 and R^7, or R^7 and R^8 may form a tri- or tetramethylene bridge or complete a fused benzene nucleus;

R^9 is a member selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl and aryllower alkyl; and

X is a pharmaceutically acceptable anion and n represents the valency of the anion;

wherein aryl as used in the foregoing definitions is phenyl, optionally substituted with 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy and trifluoromethyl; and aroyl is arylcarbonyl.

4,364,943

SYN-ISOMER OF 7-[2-ALKOXYIMINO-2-(2-AMINO-ALKANOYLAMINO- OR HALOALKANOYLAMINO-THIAZOL-4-YL) ACETAMIDS]-3-[HEXANOYL-, OR PHENYLALKANOYL-OXYMETHYL OR BENZOTHIAZOLYLTHIOMETHYL]-3-CEPHEM-4-CARBOXYLIC ACID

Takao Takaya, Kawanishi; Takashi Masugi, Kitamachi; Hisashi Takasugi, Kohamanishi, and Hiromu Kochi, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

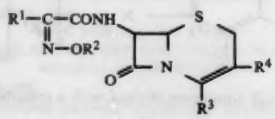
Division of Ser. No. 887,999, Mar. 20, 1978, Pat. No. 4,279,818, which is a continuation-in-part of Ser. No. 767,700, Feb. 11, 1977, Pat. No. 4,166,115. This application March 3, 1981, Ser. No. 240,221

Claims priority, application Japan, October 19, 1976, 51-125826; United Kingdom, April 12, 1976, 14916/76; June 7, 1976, 23490/76

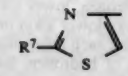
Int. Cl.³ A61K *31/545*; C07D *501/34*

U.S. Cl. 424—246 **8 Claims**

1. Syn-isomer of 3,7-disubstituted-3-cephem-4-carboxylic acid compounds of the formula:



in which



wherein R^7 is amino, lower alkanoylamino or halo(lower)alkanoylamino;

R^2 is lower alkyl;

R^3 is carboxy; and

R^4 is hexanoyloxymethyl, phenyl(lower)alkanoyloxymethyl, or benzothiazolylthiomethyl; and

pharmaceutically acceptable salts thereof.

8. An antibacterial composition comprising an effective amount of a compound of claim 1 in association with a pharmaceutically acceptable, non-toxic carrier or excipient.

4,364,944

CEPHALOSPORINS

Bernd Wetzel; Eberhard Woitun, both of Biberach; Wolfgang Reuter, Laupertshausen; Roland Maier, Biberach; Uwe Lechner, Ummendorf, and Hanns Goeth, Biberach, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung, Biberach, Fed. Rep. of Germany

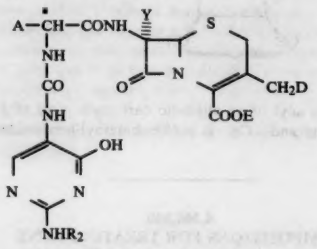
Filed November 20, 1981, Ser. No. 323,382

Claims priority, application Fed. Rep. of Germany, December 2, 1980, 3045330; December 2, 1980, 3045331

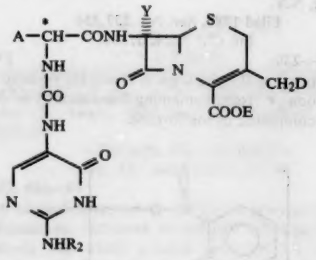
Int. Cl.³ A61K *31/545*; C07D *501/56*

U.S. Cl. 424—246 **10 Claims**

1. A compound of the formula



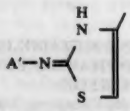
or



wherein

Y is hydrogen or methoxy;

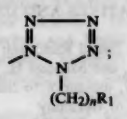
A is



or, when Y is methoxy, also phenyl, 4-hydroxy-phenyl, 2-thienyl, 3-thienyl or 3,4-dihydroxy-phenyl;

A′ is hydrogen, —$COCH_2Cl$, —$COCH_2Br$, —$COOCH_2CCl_3$, formyl or trityl;

D is hydrogen, acetoxy, aminocarbonyloxy, pyridinium, 4-aminocarbonyl-pyridinium or -S-Het, where Het is 3-methyl-1,2,4-thiadiazol-5-yl, 1,2,4-thiadiazol-5-yl, 1,3,4-thiadiazol-5-yl, 2-methyl-1,3,4-thiadiazol-5-yl, 4H-5,6-dioxo-1,2,4-triazin-3-yl, 4-methyl-5,6-dioxo-1,2,4-triazin-3-yl, 1-vinyl-tetrazol-5-yl, 1-allyl-tetrazol-5-yl or



n is 1, 2 or 3;

R_1 is hydroxyl, amino, dimethylamino, acetylamino, aminocarbonyl, aminocarbonylamino, aminosulfonyl, aminosulfonylamino, methylcarbonyl, methylsulfonylamino, cyano, hydroxysulfonylamino, methylsulfonyl, methylsulfinyl, a carboxylic acid group or a sulfonic acid group; or $-(CH_2)_nR_1$ is alkyl of 1 to 4 carbon atoms or 2,3-dihydroxypropyl;

R_2 is an unsubstituted or monosubstituted radical selected from the group consisting of 3-pyridyl, 5-pyrimidinyl, 2-thienyl, 2-furyl-methyl, 2-thienyl-methyl, 2-imidazolyl-methyl, 2-thiazolyl-methyl, 3-pyridyl-methyl or 5-pyrimidinyl-methyl, where the substituent is chlorine, methyl, acetylamino, hydroxyl, methylsulfinyl, methylsulfonyl, aminocarbonyl or aminosulfonyl; and

E is hydrogen or a carboxyl-protective group which is easily removable in vitro or in vivo,

or, when E is hydrogen, a non-toxic, pharmacologically acceptable salt thereof formed with an inorganic or organic base.

9. An antibiotic pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an effective antibiotic amount of a compound of claim 1.

4,364,945

NASAL COMPOSITION FOR RELIEVING NASAL DISTRESS

Barry J. Whittle, 8770 Sand Point Way NE., Seattle, Wash. 98115

Continuation of Ser. No. 103,208, Dec. 13, 1979, Pat. No. 4,269,835. This application April 20, 1981, Ser. No. 255,360

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

Int. Cl.³ A61K *31/54, 31/355*

U.S. Cl. 424—247 **1 Claim**

1. A composition for topical application to the nasal passageways which does not employ a vasoconstrictor compound as a decongestant, consisting essentially of a buffered, isotonic aqueous solution containing an effective amount of antihistamine and a saturated amount of one or more of the natural or synthetic isomers of tocopherol or the esters of one of the isomers of tocopherol.

4,364,946

METHOD OF TREATING INSUFFICIENCIES IN HEMATOSIS WITH ALMITRINE

Etienne Labeyrie; Jean-Pierre Poirier, both of Paris, and Francoise Arnaud, La Garenne Colombes, all of France, assignors to Science Union et Cie, Suresnes, France

Filed August 18, 1981, Ser. No. 294,014

Claims priority, application France, August 18, 1980, 80 18074

Int. Cl.³ A61K *31/53*

U.S. Cl. 424—249 **7 Claims**

1. A method of treating insufficiencies in hematosis in a patient suffering from such insufficiency comprising the step of administering to the said patient the compound almitrine or a pharmaceutically-acceptable salt thereof in an amount effective for such purpose by the oral or intravenous route, the said amount administered being 0.5 to 3 mg/kg/day by the oral route or 0.05 to 0.3 mg/kg/day by the intravenous route.

4,364,947

VINCAMINE DERIVATIVES USEFUL AS CEREBRAL METABOLIC AND CIRCULATORY REGULATORS

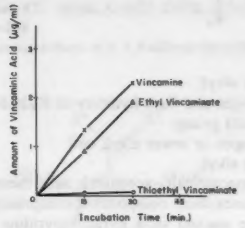
Yoshio Toyomaki, Nara, Japan, assignor to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

Filed May 8, 1981, Ser. No. 261,977

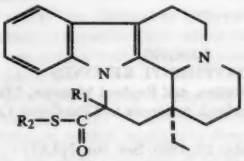
Claims priority, application Japan, May 16, 1980, 55-65774

Int. Cl.³ A61K *31/435*; C07D *461/00*

U.S. Cl. 424—256 **9 Claims**

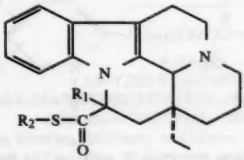


1. Compounds having the general formula (I):



wherein R_1 is hydrogen or a hydroxyl group and R_2 is an alkyl group having 1 to 4 carbon atoms, and salts thereof.

9. A method for treating cerebral blood flow disorders which comprises administering to a host a therapeutically effective dose of a compound having the general formula (I):



wherein R_1 is hydrogen or a hydroxyl group and R_2 is an alkyl group having 1 to 4 carbon atoms, or a pharmacologically acceptable salt thereof.

4,364,948

PYRAZOLO[3,4- b]PYRIDINE COMPOUNDS

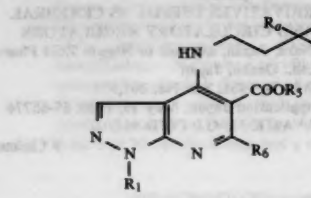
Anthony F. Heald, Glen Mills, Pa., and Richard A. Wildonger, Elmwood, Del., assignors to ICI Americas Inc., Wilmington, Del.

Filed September 28, 1981, Ser. No. 306,481

Int. Cl.³ A61K *31/44*; C07D *471/04*

U.S. Cl. 424—256 **11 Claims**

1. A pyrazolopyridine compound of the following formula (I)



(I)

wherein

R_1 is lower alkyl;

R_a is hydrogen and R_b is hydroxy or R_a and R_b combine to form a =O group;

R_5 is hydrogen or lower alkyl; and

R_6 is lower alkyl,

and the pharmaceutically-acceptable salts thereof.

9. A pharmaceutical composition comprising an anxiolytically-effective amount of a pyrazolopyridine of claim 1 in association with a pharmaceutically-acceptable diluent or carrier.

4,364,949

HYDROXYPHENYL KETONES

Rene Muntwyler, Hofstetten, and Raphael Menasse, Münchenstein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

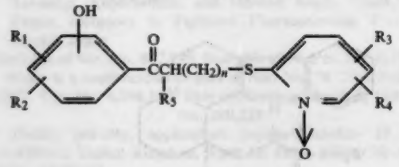
Filed December 10, 1980, Ser. No. 214,825

Claims priority, application Switzerland, December 21, 1979, 11401/79

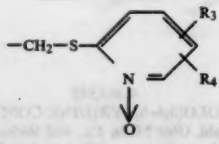
Int. Cl.³ C07D *213/64;* A61K *31/44*

U.S. Cl. 424—263 **10 Claims**

1. A hydroxyphenyl ketone of the formula:



in which n is the number 0, 1, 2 or 3, wherein the hydroxyl group is in the 3-position only when n is 0 or 1, R_1 and R_2 independently of one another are hydrogen, fluorine, chlorine, bromine, nitro, methyl or methoxy, R_3 is hydrogen, chlorine, bromine, methyl or methoxy, R_4 is hydrogen, chlorine, bromine or methyl, and R_5 is hydrogen or, if n is 1, a group of the formula:



in which R_3 and R_4 are as defined above.

10. A method for combating micro-organisms on or in an organic substrate and for protecting said substrate against micro-organisms, comprising the step of incorporating in or applying to the surface of said substrate an effective amount of a hydroxyphenyl ketone of claim 1.

4,364,950

5-CYANO-PROSTACYCLIN DERIVATIVES AND USE AS MEDICINES

Werner Skuballa; Helmut Vorbrüggen; Bernd Radüchel; Jorge Casals-Stenzel; Ekkehard Schillinger, and Michael H. Town, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

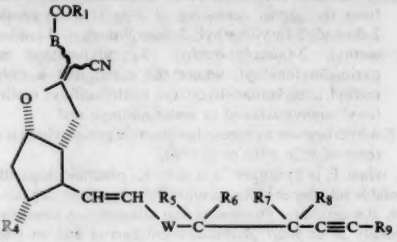
Filed November 2, 1981, Ser. No. 317,621

Claims priority, application Fed. Rep. of Germany, October 31, 1980, 3041602

Int. Cl.³ A61K *31/557;* C07D *307/935*

U.S. Cl. 424—263 **23 Claims**

1. A 5-cyano-prostacyclin of the formula



wherein

R_1 is OR_2 or NHR_3; R_2 and R_3 each independently is (a) H, (b) C_{1-10}-alkyl, (c) C_{1-10}-alkyl substituted by halo, C_{1-4}-alkoxy or phenyl, 1-naphthyl or 2-naphthyl each optionally substituted as defined below, (d) C_{4-10}-cycloalkyl, (e) C_{4-10}-cycloalkyl substituted by C_{1-4}-alkyl, (f) phenyl, 1-naphthyl or 2-naphthyl, (g) phenyl, 1-naphthyl or 2-naphthyl substituted by 1–3 halogen atoms, phenyl, 1–3 alkyl groups of 1–4 C atoms each, or a chloromethyl-, fluoromethyl-, trifluoromethyl-, carboxyl-, hydroxy- or alkoxy-group of 1–4 C atoms, or (h) an aromatic, 5- or 6-membered heterocyclic ring containing one hetero atom which is O, N or S, the remaining atoms being carbon; or R_3 is an acyl group of a C_{1-15}-hydrocarbon carboxylic or sulfonic acid;

B is straight chain or branched alkylene of 2–10 C atoms;

W is hydroxymethylene or

wherein the OH group may be in the alpha or beta position, and is optionally modified by replacement of the H atom of the OH with an ether or acyl group which is conventional for such replacements in prostaglandins and which is readily cleavable at physiological pH's;

R_4 is hydroxy, optionally modified as described for W above;

R_5, R_6, R_7 and R_8 each independently is hydrogen, alkyl of 1–5 C atoms of methoxy; and

R_9 is alkyl of 1–5 C atoms, or

for compounds wherein R_2 is H, the salts thereof with physiologically compatible bases.

23. A method of lowering the blood pressure in a host in need of such treatment comprising administering an effective amount of a compound of claim 1 to the host.

4,364,951

PROSTACYCLINS AND USE AS MEDICINAL AGENTS

Werner Skuballa; Helmut Vorbrueggen; Olaf Loge; Peter Vischer, and Bernd Radüchel, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

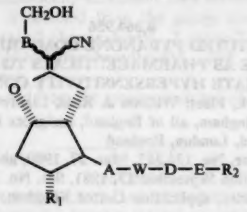
Filed November 2, 1981, Ser. No. 317,690

Claims priority, application Fed. Rep. of Germany, October 31, 1980, 3041601

Int. Cl.³ A61K *31/557*; C07D *307/935*

U.S. Cl. 424—263 18 Claims

1. A prostane derivative of the formula



wherein

B is straight-chain or branched alkylene of 1–10 carbon atoms,

A is —CH_2—CH_2—, trans—CH=CH—, or —C≡C—;

W is hydroxymethylene or a

wherein the OH—group can be in the α-or β-position, and is optionally modified by replacement of the H atom with an ether or acyl group which is conventional for such replacements in prostaglandins and which is readily cleavable at physiological pH's;

D and E together are a direct bond or

D is straight-chain or branched alkylene of 1–10 carbon atoms or such alkylene of 4–10 carbon atoms containing a double bond in the 2- or 3-position, all of which can optionally be substituted by fluorine, 1,2-methylene, 1,1-trimethylene, or methoxy;

E is oxygen, sulfur, —C≡C— or a direct bond;

R_2 is C_{1-10}-alkyl or C_{2-10} alkenyl each of which optionally is substituted by phenyl, 1-naphthyl or 2-naphthyl each of which is optionally substituted as defined below; C_{4-10} cycloalkyl optionally substituted by C_{1-4} alkyl; phenyl, 1-naphthyl, or 2-naphthyl, each of which is optionally substituted by 1–3 halogen atoms, a phenyl group, 1–3 alkyl groups each independently of 1–4 carbon atoms, or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, C_1–C_4-alkoxy, or hydroxy group; or an aromatic 5- or 6-membered heterocyclic ring having one hetero ring atom of O, N, or S, the remaining atoms being carbon; and

R_1 is hydroxy optionally modified as described for W above.

18. A method of lowering the blood pressure in a host in need of such treatment comprising administering an effective amount of a compound of claim 1 to the host.

4,364,952

CERTAIN 1,4-DIHYDRO-2,6-DIMETHYL-3,5-PYRIDINE-DICARBOXYLATES, COMPOSITION CONTAINING SAME AND METHOD OF USE

Carsten Materne, Bonn, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

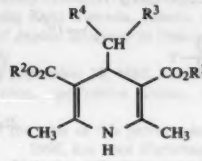
Filed May 29, 1981, Ser. No. 268,417

Claims priority, application Fed. Rep. of Germany, June 12, 1980, 3021958

Int. Cl.³ A61K *31/455*; C07D *213/55*

U.S. Cl. 424—266 9 Claims

1. A compound which is a 1,4-dihydropyridine of the formula



(I)

or a salt pharmaceutically acceptable thereof,

in which

R^1 and R^2 are identical or different and denote a straight-chain or branched alkyl radical with 1 to 4 carbon atoms,

R^3 represents a hydrogen atom, a methyl group or a phenyl radical and

R^4 represents a phenyl or phenoxy radical unsubstituted, or may optionally carry 1 substituent selected from nitro, halogen, methyl, methoxy or dimethyl, with a proviso that R^3 represents hydrogen or methyl only when R^4 is phenoxy or substituted phenoxy.

9. A method of lowering blood pressure in warm-blooded animals which comprises administering to the animals in need of such treatment, a blood pressure lowering effective amount of an active compound according to claim 1 either alone or in admixture with a diluent or in the form of a medicament.

4,364,953

2-0- AND 5-0-SUBSTITUTED 1.4;3.6-DIANHYDROHEXITOL MONONITRATES AND PHARMACEUTICAL COMPOSITION

Klaus Klessing, Ettlingen, and Shyam S. Chatterjee, Karlsruhe, both of Fed. Rep. of Germany, assignors to Firma Willmar Schwabe, Karlsruhe, Fed. Rep. of Germany

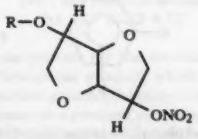
Filed July 20, 1981, Ser. No. 285,407

Claims priority, application Fed. Rep. of Germany, July 25, 1980, 3028289

Int. Cl.³ A61K *31/34, 31/455*; C07D *493/04*

U.S. Cl. 424—266 14 Claims

1. 2-O- and 5-O-substituted 1.4;3.6-Dianhydrohexitol mononitrates of the general formula I,



(I)

wherein R is a halogen-substituted phenyl group, a methanesulphonyl or nicotinoyl group, as well as their physiologically acceptable acid-addition salts, insofar as R signifies the nicotinoyl group.

4,364,954
DIPHENYLPROPANAMINES, COMPOSITIONS THEREOF AND USE THEREOF

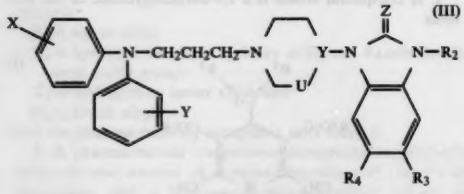
Ian C. Pattison, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 111,043, Jan. 10, 1980, Pat. No. 4,292,321, which is a continuation of Ser. No. 42,175, May 24, 1979, abandoned. This application May 29, 1981, Ser. No. 268,502

Int. Cl.³ A61K *31/445;* C07D *401/04*

U.S. Cl. 424—267 10 Claims

1. A compound of the formula (III)



(III)

and the non-toxic, pharmaceutically acceptable salts thereof.

9. A composition for treating schizophrenia and related ailments in a mammal consisting essentially of an anti-schizophrenically effective amount of a compound as defined in claim 1, in combination with a pharmaceutically acceptable carrier.

4,364,955
COMBATING FUNGI WITH 1-(SUBSTITUTED PHENYL)-1-OXIMINO-2-(1,2,4-TRIAZOL-1-yl)-ETHANE

Wolfgang Krämer; Karl H. Büchel; Helmut Timmler, all of Wuppertal; Wilhelm Brandes, Leichlin, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 22,913, Mar. 22, 1979, Pat. No. 4,264,772. This application April 21, 1980, Ser. No. 142,515

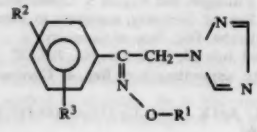
Claims priority, application Fed. Rep. of Germany, April 18, 1978, 2816817

The portion of the term of this patent subsequent to April 28, 1998, has been disclaimed.

Int. Cl.³ A01N *43/64, 55/02;* C07D *249/08*

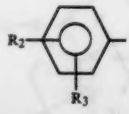
U.S. Cl. 424—269 7 Claims

1. A 1-(substituted phenyl)-1-oximino-2-(1,2,4-triazol-1-yl)-ethane of the formula



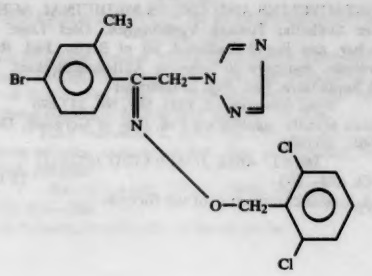
(I)

in which R_1 is 2,6-dichlorobenzyl, and R_2



is 2-chloro-4-methylphenyl, 4-bromo-2-methylphenyl, or 4-chloro-2-trifluoromethylphenyl,
or an acid addition salt or metal salt complex thereof.

3. A compound according to claim 1, wherein such compound is 1-(4-bromo-2-methylphenyl)-1-(2,6-dichlorobenzyloximino-2-(1,2,4-triazol-1-yl)-ethane of the formula



4,364,956
5-SUBSTITUTED PYRANONE COMPOUNDS AND THEIR USE AS PHARMACEUTICALS TO TREAT AN IMMEDIATE HYPERSENSITIVITY CONDITION

Barry P. Clark, Fleet; William J. Ross, Lightwater, and Alec Todd, Wokingham, all of England, assignors to Lilly Industries Limited, London, England

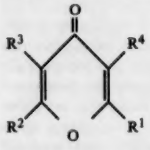
Division of Ser. No. 134,387, Mar. 27, 1980, abandoned. This application September 17, 1981, Ser. No. 303,307

Claims priority, application United Kingdom, April 5, 1979, 7912063

Int. Cl.³ A61K *31/34, 31/35;* C07D *309/32*

U.S. Cl. 424—269 9 Claims

1. A compound of the formula



in which R^1 is $COOR^5$, $CONHR^5$, cyano, 5-tetrazolyl or 5-tetrazolylaminocarbonyl, where R^5 is hydrogen or C_{1-6} alkyl; R^2 is hydrogen or C_{1-6} alkyl; R^3 is a group of the formula

$$R^6—(Z)_m—$$

where m is 0 or 1, Z is O, S, SO, SO_2 or CO, and R^6 is phenyl optionally substituted by one or more group selected from halogen, C_{1-4} alkyl, C_{3-6} cycloalkyl, C_{1-4} alkoxy, benzyloxy, hydroxy, nitro, C_{1-4} alkylthio, C_{1-4} alkylsulphinyl, C_{1-4} alkylsulphonyl, amino and NHR^7 where R^7 is C_{2-6} acyl; and R^4 is hydrogen, C_{1-6} alkyl or halogen; and pharmaceutically acceptable salts thereof.

8. A method of treating an animal, including a human, susceptible to or suffering from an immediate hypersensitivity condition of the type represented by asthma, which comprises administering a effective amount of a compound as defined in claim 1.

4,364,957
BIS-ESTERS OF ALKANEDIOLS AS ANTIBACTERIAL AGENTS

Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

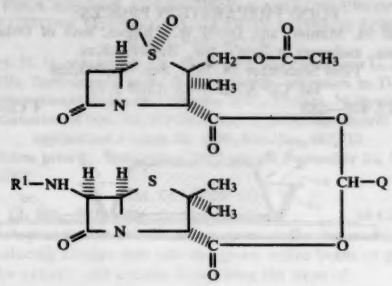
Continuation-in-part of Ser. No. 79,127, Sep. 26, 1979, Pat. No. 4,256,733. This application 1981, Ser. No. 236,407

The portion of the term of this patent subsequent to March 17, 1998, has been disclaimed.

Int. Cl.³ C07D *499/44;* A61K *31/43*

U.S. Cl. 424—271 9 Claims

1. A compound of the formula



and the pharmaceutically-acceptable salts thereof,

wherein R^1 is selected from the group consisting of 2-phenylacetyl, 2-phenoxyacetyl, 2-amino-2-phenylacetyl, 2-amino-2-[4-hydroxyphenyl]acetyl and 2-carboxy-2-phenylacetyl;

and Q is selected from the group consisting of hydrogen and methyl.

4,364,958

1-SUBSTITUTED-3-CYCLOALKYL-SULFONYL-PYRROLIDINE-2,5-DIONE DERIVATIVES AND FUNGICIDAL COMPOSITIONS THEREOF

Jenö Seres, Erika Varkonyi, Nél Schlanrcskó, Sandor Virag, Gábor Kulcsár, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

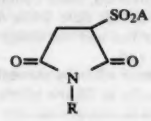
Filed July 16, 1980, Ser. No. 169,439

Claims priority, application Hungary, July 17, 1979, CI 1951

Int. Cl.³ C07D *207/416;* A01N *43/36*

U.S. Cl. 424—274 23 Claims

1. A compound of the formula (I)



(I)

wherein

A is C_5 to C_{10} cycloalkyl; and

R is hydrogen, C_1 to C_6 alkyl, phenyl optionally substituted by either one or two substituents wherein the substituents are selected from the group consisting of C_1 to C_4 alkyl, nitro, hydroxy, carboxy, sulfo, halogen, C_1 to C_4 alkoxy, acetoxy, C_2 to C_5 alkoxycarbonyl, and acetyl, or phenyl-(C_1 to C_4 alkyl).

12. A fungicidal pharmaceutical composition comprising a fungicidally effective amount of at least one 1-substituted-3-cycloalkyl-sulfonyl-pyrrolidine-2,5-dione of the formula I as defined in claim 1, together with a conventionally used fungicidally acceptable filling agent.

4,364,959

IMINO ETHER SULFIDE DERIVATIVES AND USE AS INSECTICIDES

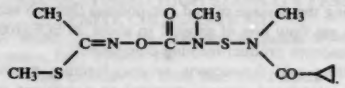
Jozef Drabek, Allschwil, Switzerland, and Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 807,107, Jun. 16, 1977. This application June 20, 1978, Ser. No. 917,447

Int. Cl.³ A01N *35/10;* C07C *119/18, 125/06;* A01N *37/18*

U.S. Cl. 424—298 13 Claims

1. The compound of the formula



12. An insecticidal composition comprising an insectidially effective amount of a compound of claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or 11, together with an appropriate carrier therefor.

4,364,960

PROCESS FOR THE PRODUCTION OF VINEGAR WITH HIGH ACETIC ACID CONCENTRATION

Yoshio Kunimatsu, Handa; Hajime Okumura, Toda; Hiroshi Masai, Handa; Koki Yamada, Handa, and Mikio Yamada, Handa, all of Japan, assignors to Nakano Vinegar Co., Ltd., Tokyo, Japan

Filed September 30, 1980, Ser. No. 192,468

Claims priority, application Japan, October 24, 1979, 54-136373

The portion of the term of this patent subsequent to August 4, 1998, has been disclaimed.

Int. Cl.³ C12J *1/00*

U.S. Cl. 426—17 3 Claims

1. A continuous batch process for the production of vinegar comprising:

(a) preparing a broth of alcohol, water, finished vinegar or acetic acid and nutrients for acetic acid bacteria;

(b) charging the broth into a first submerged fermentation tank;

(c) innoculating the broth with acetic acid bacteria to initiate fermentation under aeration;

(d) withdrawing a portion of the fermenting broth after fermentation has proceeded at a temperature between 27° and 32° C., at the point of time when the acetic acid concentration of the fermenting broth has increased to between 12 and 15% weight by volume and charging the withdrawn portion into another submerged fermenting tank while maintaining the dissolved oxygen concentration of the withdrawn portion at such an extent so as not to reduce the activity of acetic acid bacteria;

(e) recharging said first fermentation tank with a mash; and

(f) continuing fermentation under aeration in said another tank while lowering the temperature of fermenting broth from a temperature between 27° and 32° C. in said another tank in such a manner that any lowered temperature of fermenting broth may not become higher than the temperature lowered antecedently thereto and that the final temperature of the fermenting broth may not fall below 18° C.

4,364,961

MANUFACTURE OF BREAD CRUMB-LIKE PRODUCT

Kenneth S. Darley, Whitby; Michael A. F. Fenn, Ajax, and David V. Dyson, Richmond Hill, all of Canada, assignors to The Griffith Laboratories, Limited, Scarborough, Canada

Filed March 30, 1981, Ser. No. 248,721

The portion of the term of this patent subsequent to August 19, 1997, has been disclaimed.

Int. Cl.³ A23D *6/00*

U.S. Cl. 426—19 12 Claims

1. A continuous process for the manufacture of a particulated leavened farinaceous product, which comprises:

feeding farinaceous product-forming components including flour and water to a continuous mixing zone in quantities such that the total moisture in the farinaceous product-forming components is about 30 to about 50% by weight,

advancing the farinaceous product-forming components in plug flow manner through said mixing zone in about 15 to about 100 seconds,

introducing at least one gaseous material to said farinaceous

product-forming components at a plurality of locations during the passage of said components through said zone at a gas flow rate of about 1 to about 30 SCF/100 lb. of farinaceous product-forming components,

subjecting said farinaceous product-forming components and introduced gaseous material to conditions of high shear within said mixing zone such that the work done on the materials within the mixing zone varies from about 15 to about 40 watt hr/lb. of farinaceous product-forming components to cause mixing of said components and distribution of gaseous material within the mixture,

subjecting said farinaceous product-forming components and introduced gaseous material to an elevated temperature within said mixing zone during at least a major proportion of the time of passage thereof through said mixing zone to cause partial gelation of starch material contained in said farinaceous product-forming components while also subjecting said farinaceous product-forming components to a back pressure of about 200 to about 600 psig,

extruding dough having an internal temperature of about 90° to about 210° F. through a die having a plurality of openings therein having a maximum diameter of about $\frac{1}{4}$ to about 1 inch,

cutting the dough extruded through said plurality of openings into discrete dough particles of about 1/16 to about $\frac{1}{2}$ inch in length,

subjecting said discrete dough particles to a flowing air stream having a temperature of about 180° to about 300° F. to surface dry the particles and to stabilize the physical form thereof, and

drying said surface-dried particles to a moisture level of below about 10% by weight.

4,364,962

METHOD FOR ENZYMATICALLY DECOMPOSING A LOW MOLECULAR WEIGHT MATERIAL

Jürgen Tuchenhagen, Vlotho-Uffeln; Franz Roiner, Barsinghausen, and Josef Grosserhode, Frielingen, all of Fed. Rep. of Germany, assignors to Prof. Dipl.-KFM. Franz Poiner, Barsinghausen, Fed. Rep. of Germany

Continuation of Ser. No. 102,850, Dec. 12, 1979, abandoned. This application June 24, 1981, Ser. No. 276,819

Claims priority, application Fed. Rep. of Germany, December 20, 1978, 2855100

Int. Cl.³ A23C *9/12, 9/142, 9/146, 21/02*

U.S. Cl. 426—41 **11 Claims**

1. A method for enzymatically decomposing lactose in an aqueous polydispersed system selected from the group consisting of milk, skimmilk, curdled milk, whey, sour cream, buttermilk, permeated milk, and mixtures thereof, the polydispersed system having a high molecular weight component and a low molecular weight componenet containing lactose, said method comprising the steps of:

(a) contacting the lactose with an enzyme preparation that splits lactose to saccharides and a microorganism that ferments lactose to lactic acid;

(b) separating the low molecular weight component containing decomposition products of lactose comprising saccharides and lactic acid from the high molecular weight component;

(c) recycling at least a portion of the high molecular weight component from step (b) to step (a); and

(d) separating lactic acid from the low molecular weight component containing saccharides and lactic acid and recycling the residual low molecular weight component containing saccharides to step (a);

(e) repeating steps (a) through (d) until the amount of lactose in the polydispersed system has been reduced to a predetermined level; and

(f) recovering a polydispersed system of reduced lactose content.

4,364,963

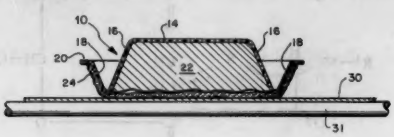
FOOD PREPARATION PROCESS

Arnold M. Munter, and David W. Ahlgren, both of Duluth, Minn., assignors to Jeno's, Inc., Duluth, Minn.

Filed September 18, 1981, Ser. No. 303,556

Int. Cl.³ A21D *8/02;* **A21B** *3/13*

U.S. Cl. 426—283 **4 Claims**



1. A food preparation process comprising the following steps in the order recited:

a. providing an inedible, heatable container having a centrally-depressed receptacle which is defined by a base at the bottom of the container and sidewalls and with an outwardly and downwardly extending rim adjacent said sidewalls and terminating in a free edge;

b. depositing a pre-prepared filling which becomes fluid when a sufficient amount of heat is applied to it into said container directly onto said depressed receptacle;

c. covering said container receptacle and said container rim with a sheet of unbaked dough and shaping the dough so that said dough conforms to said outwardly and downwardly extending container rim so that upon baking, an inverted edible receptacle is formed including sidewalls and a centrally depressed bottom which will retain the filling when said edible receptacle is positioned such that its depressed bottom is lowermost;

d. freezing the now-filled and covered container;

e. inverting the frozen filled and covered container so that the dough sheet rests on a surface and the container rests on the dough sheet;

f. heating the frozen inverted, filled container in an oven to bring the filling to a fluid state while forming a seal between the container rim and the dough sheet to prevent escape of the fluid; and

g. removing the container whereby the seal is broken and the filling flows outwardly to fill the edible receptacle.

4,364,964

PROCESS OF THE DECAFFEINATION OF GREEN COFFEE BEANS

Gerrit H. D. van der Stegen, Montfoort, Netherlands, assignor to D.E.J. International Research Company B.V., Utrecht, Netherlands

Continuation of Ser. No. 927,734, Jul. 24, 1978, abandoned. This application August 27, 1980, Ser. No. 181,899

Claims priority, application United Kingdom, August 5, 1977, 32859/77

Int. Cl.³ A23F *5/22*

U.S. Cl. 426—422 **11 Claims**

1. A continuous process for extracting caffeine from an aqueous solution containing same with an adsorbent and regenerating the adsorbent with water, said process comprising the steps of:

(1) contacting a caffeine-laden aqueous solution at a temperature of about 50° to about 100° C. with a macroporous synthetic polymer resin adsorbent produced by polymerizing a monomer containing aromatic ring systems and polar acidic groups having a P_K value greater than 6.5 and wherein the ratio of to adsorption capacity for said caffeine to total ion exchange capacity of said polymer is greater than 1 and less than 25 and thereafter

(2) regenerating the caffeine-laden resin adsorbent by contacting it with water as the sole regenerating means and removing the adsorbed caffeine from said resin.

4,364,965

PROCESS FOR EXTRACTING CAFFEINE FROM SOLUTIONS THEREOF IN CARBON DIOXIDE UNDER HIGH PRESSURE

Gerrit H. D. van der Stegen, Montfoort, and Hendricus G. J. de Wilt, Zaltbommel, both of Netherlands, assignors to D.E.J. International Research Company B.V., Utricht, Netherlands

Continuation of Ser. No. 958,666, Nov. 8, 1978, abandoned. This application August 29, 1980, Ser. No. 182,715

Claims priority, application Netherlands, November 14, 1977, 7712503

Int. Cl.[3] A23F *5/20*

U.S. Cl. 426—481 10 Claims

1. A process for decaffeinating green coffee beans without introducing foreign ions into the green coffee beans or green coffee extract, said process comprising the steps of:

(a) adjusting the moisture content of the green coffee beans to a value of from about 30 to about 60% by weight;

(b) passing water-saturated carbon dioxide through said green coffee beans under a high pressure of about 20.3 to about 40.5 MPa and extracting caffeine from the moistened coffee beans;

(c) contacting the caffeine-containing carbon dioxide gas stream of step (b) with a macroporous synthetic polymer resin adsorbent,

said resin produced by the polymerization or copolymerization of monomers containing aromatic ring systems and polar acidic groups having a P_K value greater than 7, and wherein

the ratio in said resin of the total molar adsorption capacity for caffeine, expressed as the number of moles of caffeine adsorbed per kg of resin, to complete saturation, to the total number of acidic groups, expressed as acid equivalents per kg of resin, is between 1 and 25,

thereby adsorbing and removing the caffeine from the caffeine-laden carbon dioxide gas stream;

(d) returning the carbon dioxide stream of step (c) to step (b) for reuse;

(e) regenerating the caffeine-laden adsorbent of step (c) by contacting said resin with water as the sole regenerating material at a temperature in the range of about 50° to about 100° C.;

(f) reusing the regenerated resin from step (e) in step (c); and thereafter

(g) recovering and drying the decaffeinated green coffee product.

4,364,966

BLENDS OF EGG ALBUMEN AND WHEY PROTEIN HAVING IMPROVED GEL STRENGTH

Pei K. Chang, Montrose, N.Y., assignor to Nutrisearch Company, Cincinnati, Ohio

Filed April 13, 1981, Ser. No. 253,967

Int. Cl.[3] A23C *21/04;* A23J *3/00;* A23L *1/32*

U.S. Cl. 426—573 11 Claims

1. A process for preparing a dried blend of a pasteurized egg albumen and whey protein-containing composition which exhibits improved gel strength, said dried blend comprising the steps of

(1) subjecting desugared, dried pasteurized egg albumen to a heat treatment at a temperature ranging from about 55° C. to about 65° C. for a period of time ranging from in excess of about 2 weeks to about 8 weeks beyond the time of dry pasteurization of the dry egg albumen at above about 55° C., said period of time being sufficient to elevate the gel strength of the egg albumen above 250 grams over the gel strength of the egg albumen prior to pasteurization, and

(2) blending from about 50% to about 85% of said so treated egg albumen with at least 15% of a whey protein-containing composition having from about 35% to about 80% whey protein.

4,364,967

NEUTRAL FLAVORED HIGH STABILITY PEANUT PASTE CHOCOLATE MIX

David J. Black, Tyrone, Pa., assignor to James W. Gardner Enterprises, Inc., Tyrone, Pa.

Filed October 14, 1980, Ser. No. 196,321

Int. Cl.[3] A23L *1/36*

U.S. Cl. 426—632 3 Claims

1. A process for producing a chocolate extender, said process comprising the steps of:

(a) blanching a starting batch of peanuts;

(b) pressing said peanuts in order to distort said peanuts while substantially preserving their particle integrity in order to remove a substantial proportion of the natural oil contained therein;

(c) reconstituting and roasting said peanuts while substantially preserving their particle integrity in a first bath of high stability oil in the range of from 275° to 350° F.;

(d) quenching said peanuts while substantially preserving their particle integrity in a second bath of high stability oil at a temperature substantially in the range of from 140° to 170° F.;

(e) said high stability oil having a melting point approximately equal to that of chocolate;

(f) said high stability oil replacing said natural oil in said peanuts to produce an intermediate batch of peanuts containing from 45 to 60 weight percent of said high stability oil;

(g) cooling said peanuts while substantially maintaining their particle integrity to set up said high stability oil therein;

(h) milling said peanuts into a paste characterized by a particle size of less than 74 microns;

(i) and vacuum degassing said paste to substantially remove entrained oxygen;

(j) said paste being characterized by substantially neutral flavor, high stability, and compatibility with chocolate.

4,364,968

PROCESS FOR PREPARING A DRIED GRAPE PRODUCT

Reuben H. Waitman, Pearl River, N.Y., and Bettie M. Frank, West Orange, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed March 31, 1981, Ser. No. 249,544

Int. Cl.[3] A23L *1/212;* A23B *7/08*

U.S. Cl. 426—639 4 Claims

1. A process for preparing a dried grape product comprising:

(a) providing whole or sectioned grapes;

(b) immersing the grapes into an aqueous hydrophillic carbohydrate solution having a concentration effective to provide significant osmotic withdrawal of water from the grapes and deposition of carbohydrate into the grapes in place of the water said hydrophillic carbohydrate is a member selected from the group consisting of glycerol, propylene glycol, fructose, sorbitol, mannitol, high fructose corn syrup, honey corn syrup, and combinations of these;

(c) heating the grapes and carbohydrate for a period of time and at a temperature effective to melt surface wax and to cause inactivation of any normally-degrading natural enzymes present in the grapes and to increase the rate of osmotic dehydration and carbohydrate infusion;

(d) removing excess solution from the surface of the grape;

(e) drying the grapes to a moisture content of less than 30%; and,

(f) converting the dry grapes into simulated raisins by storing the grapes obtained after step (e) for a period of time under controlled humidity and at an elevated temperature effective to provide a darkening in color and to develop a natural raisin-like flavor within the grapes without further drying of the grapes.

4,364,969

METHOD OF COATING TITANIUM AND ITS ALLOYS

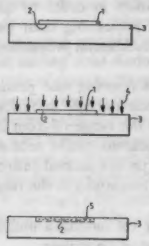
Geoffrey Dearnaley, Abingdon, and Robert E. J. Watkins, Brightwell-cum-Sotwell, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed December 8, 1980, Ser. No. 214,102

Claims priority, application United Kingdom, December 13, 1979, 7943049

Int. Cl.³ C23C 13/02

U.S. Cl. 427—38 10 Claims



1. A process for improving the wear resistance of titanium and its alloys comprising the operations of coating a surface of a workpiece made of titanium or an alloy of titanium and which is likely to be subject to wear with a layer of a metal selected from the group consisting of aluminium, copper, iron, tin, nickel, platinum, zinc and zirconium, and then subjecting the coated surface to bombardment with ions of a light species the mass of which is insufficient to cause a harmful degree of sputtering of the surface during implantation, so as to cause the metal to migrate into the workpiece.

4,364,970

METHOD FOR IMPROVING SURFACE PROPERTIES OF SHAPED ARTICLES OF POLYVINYL CHLORIDE RESINS

Kiyoshi Imada; Tokuji Abe, both of Omiya, and Susumu Ueno, Ibaragi, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Toyka, Japan

Continuation of Ser. No. 96,423, Nov. 21, 1979, abandoned. This application June 23, 1981, Ser. No. 276,485

Claims priority, application Japan, November 30, 1978, 53-148545

Int. Cl.³ B05D 3/04, 3/14

U.S. Cl. 427—40 8 Claims

1. A method for improving surface properties of a shaped article of a vinyl chloride-based resin which comprises

(a) exposing the surface of the shaped article to low temperature plasma of a gas having no polymerizability in the plasma condition, and

(b) contacting the plasma-treated surface of the shaped article with an aqueous solution which is devoid of any film forming component, is inert to and does not dissolve or swell the vinyl chloride-based resin and which contains a surface active agent, within 24 hours after the termination of the exposure to the plasma for at least 1 second and then rinsing and drying the thus contacted article.

4,364,971

WATERPROOF PHOTOGRAPHIC PAPER AND METHOD OF PRODUCING SAME

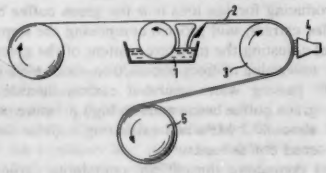
Wieland Sack, Bissendorf; Reiner Anthonsen, Bramsche, and Ferenc Kertesz, Bissendorf, all of Fed. Rep. of Germany, assignors to Felix Schoeller, Jr. GmbH & Co., Fed. Rep. of Germany

Filed June 12, 1981, Ser. No. 273,110

Claims priority, application Fed. Rep. of Germany, June 18, 1980, 3022709

Int. Cl.³ B05D 3/06

U.S. Cl. 427—44 13 Claims



1. Method for making a waterproof photographic paper support which comprises:

(a) coating at least one surface of a sized photographic base paper with a pigment-coating resin hardenable by radiation, with resin comprising acrylatemodified mixtures of organic resins containing c=c double bonds,

(b) pressing the resin coated surface against a substantially solid high gloss surface,

(c) bombarding the surface of the paper opposite the coated surface with sufficient electrons to substantially completely harden the resin while the resin is in contact with said high gloss surface; and

(d) separating the substantially completely cured coated surface from said high gloss surface to form a waterproof paper support having a surface smoothness which is at least 70% that of an ideal flat mirror surface, as measured by an image reflected from said hardened, coated surface.

4,364,972

PRESSURE-SENSITIVE ADHESIVE COPOLYMERS OF ACRYLIC ACID ESTER AND N-VINYL PYRROLIDONE

John D. Moon, Hastings, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed 1981, Ser. No. 225,763

Int. Cl.³ B05D 3/06; C08F 8/00

U.S. Cl. 427—54.1 6 Claims

1. A pressure-sensitive adhesive copolymer of essentially only

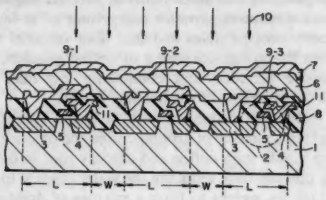
(1) acrylic acid ester of non-tertiary alcohol, the alkyl groups of which have an average of about 4 to 14 carbon atoms, said acrylic acid ester being per se polymerizable to a sticky, stretchable, elastic adhesive mass, and

(2) N-vinyl-2-pyrrolidone, wherein the improvement comprises the N-vinyl-2-pyrrolidone comprises from 15 to 50 parts by weight of the total monomers (1) and (2) and the copolymer when uncrosslinked has a Fikentscher K-value exceeding 100 and when crosslinked has a gel swell in ethyl acetate exceeding 600%.

4,364,973
METHOD FOR FABRICATING A SOLID-STATE IMAGING DEVICE USING PHOTOCONDUCTIVE FILM

Norio Koike, Tokyo; Toru Baji, Kokubunji; Toshihisa Tsukada, Sekimachi, and Hideaki Yamamoto, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed March 26, 1981, Ser. No. 247,737
Claims priority, application Japan, March 26, 1980, 55-37463
Int. Cl.[3] B05D *1/32;* H01L *31/18*
U.S. Cl. 427—75 11 Claims

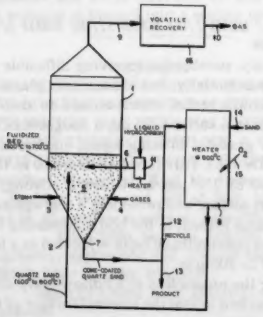


1. A method for fabricating solid-state imaging devices wherein a photoconductive film for photoelectric conversion to generate photocharges and a transparent electrode are stacked on a scanner integrated circuit in which switching elements in a two-dimensional array and scanning shift registers for scanning the switching elements are integrated, characterized by forming said photoconductive film by the steps of holding a shield plate which is open in only an area to form said photoconductive film, in close contact with said scanner integrated circuit or with some spacing therefrom, and depositing a photoconductive material onto said scanner integrated circuit, whereby said shield plate prevents deposition of photoconductive material on areas of said scanner integrated circuit not corresponding to the open part of the shield plate.

4,364,974
METHOD OF PRODUCING AN INTERMEDIATE IN THE PRODUCTION OF SILICON OR SILICON CARBIDE

Gert-Wilhelm Lask, Berus, Fed. Rep. of Germany, assignor to International Minerals & Chemical Luxembourg Societe Anonyme, Luxembourg, Luxembourg

Filed June 19, 1981, Ser. No. 275,159
Claims priority, application Fed. Rep. of Germany, June 21, 1980, 3023297
Int. Cl.[3] C10B *55/10, 45/00*
U.S. Cl. 427—213 3 Claims



1. A continuous method of producing an intermediate in the production of silicon or silicon carbide, said intermediate being silicon dioxide particles coated with carbon layers, said method of comprising the steps of:

(a) fluidizing silicon dioxide particles in a fluidized bed with a fluidizing gas in the presence of cracking hydrocarbons and at a temperature such that coke coatings form on said particles to produce said carbon layers, the coated particles becoming heavier and sinking toward the bottom of said bed;

(b) spraying liquid hydrocarbons heated to a temperature above 250° C. into said bed to crack the liquid hydrocarbons therein and form said cracking hydrocarbons;

(c) continuously withdrawing coke-coated particles from the bottom of said bed;

(d) continuously feeding coke-coated particles withdrawn in step (c) to a preheater together with fresh silicon dioxide particles, and burning at least part of the coke coatings of the particles in said preheater to heat the particles in said preheater to a temperature of substantially 600° to 800° C.;

(e) continuously feeding preheated particles from said preheater in step (d) into the fluidized bed of step (a) for coke-coating therein;

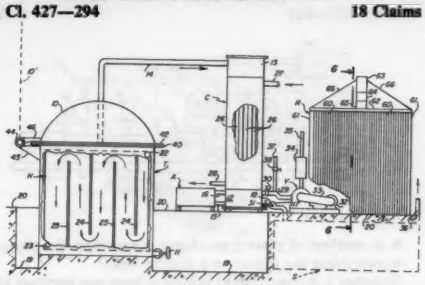
(f) continuously feeding fresh silicon dioxide particles into the preheater in step (d); and

(g) upon attainment of thermal equilibrium between said preheater and said bed, recovering as said intermediate, an excess of the particles withdrawn in step (c) over the coke-coated particles fed to step (d).

4,364,975
METHOD OF AND APPARATUS FOR PRODUCING ASPHALT SATURATED FIBERBOARD

Dale J. Cork, Elgin, Ill., and Russell Pellman, deceased, late of West Dundee, Ill. (by Marguerite Pellman, executrix), assignors to W. R. Meadows, Inc., Elgin, Ill.

Filed June 29, 1981, Ser. No. 278,797
Int. Cl.[3] B05D *3/00, 3/12;* C23C *13/08*
U.S. Cl. 427—294 18 Claims



1. A method of impregnating saturable members with asphalt or the like, which comprises:

placing a series of laterally spaced members in an upright position in an enclosable space;

enclosing and sealing said space;

introducing a solution of asphalt and a solvent therefor into said enclosed space to a level corresponding to the upper edges of said members in order to impregnate said members with said solution;

removing solution at the lower portion of said enclosed space, including solution which drains from said members;

applying suction to said enclosed space in order to reduce the pressure therein and produce a vacuum;

supplying heat to said enclosed space;

continuing said suction to reduce the pressure in said enclosed space to a relatively high degree of vacuum; ;p1 supplying sufficient heat to said enclosed space so that the treated members will contain a minimum of solvent in addition to asphalt;

condensing the solvent vapors removed by suction from said enclosed space and collecting the condensed solvent for reuse;

discontinuing said suction;

bleeding air into said enclosed space to reduce the vacuum

therein and produce an equilization with atmospheric pressure;
unsealing and opening said space; and
removing the treated members from said space.

4,364,976
METHOD OF PREPARING MODIFIED WOOD

Skripchik L. Prokofievna, ulitsa Koltsova, 4, korpus 3, kv. 59; Shutov G. Moiseevich, ulitsa Lomonosova, 10, kv. 33; Erdman M. Emmanuilovna, ulitsa Vostochnaya, 11, kv. 5; Pukhalsky M. Eduardovich, ulitsa Kakhovskaya 37, kv. 32; Lezhen V. Ivanovich, Leninsky prospekt 14, kv. 15; Shevchenko A. Ignatievich, ulitsa Ya.Mavra, 44, kv. 20, all of Minsk, and Vrublevsky E. Vladimirovich, Gomelskaya oblast ulitsa Zavodskaya 3, Svetlogorsk, all of U.S.S.R.

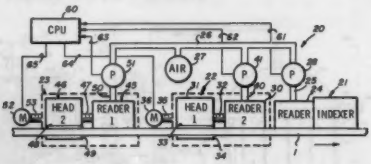
Filed July 23, 1981, Ser. No. 285,905
Int. Cl.³ B05D *1/18, 3/02*
U.S. Cl. 427—382 5 Claims

1. A method of preparing modified wood, comprising the successive steps of impregnating a wood in two stages, at the first stage the wood being impregnated by phenolic alcohols, while at the second stage the wood is impregnated by fire retardants, drying it and heat treating to obtain the end product.

4,364,977
AUTOMATIC SELF-ADJUSTING PROCESSING APPARATUS

Carl E. Bernardi, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed July 6, 1981, Ser. No. 280,597
Int. Cl.³ B05C *1/06, 1/16*
U.S. Cl. 427—429 6 Claims



6. A method of plating an object comprising the steps of:
transporting the object to a plating head;
directing a stream of fluid against at least one aperture in said object;
measuring the back pressure in said stream;
providing an output that is a function of said back pressure; and
if necessary, adjusting the position of the plating head to obtain a predetermined output.

4,364,978
PROCESS FOR HIGH-TEMPERATURE GALVANIZING

Erwin Diehl, Mannheim; Wolfgang Müller, Hollfeld, and Artur Stroh, Rohrhof, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Fed. Rep. of Germany

Filed July 7, 1981, Ser. No. 281,221
Claims priority, application European Pat. Off., August 14, 1980, 80104834.9
Int. Cl.³ C23C *1/02*
U.S. Cl. 427—433 2 Claims

1. In the process for high-temperature galvanizing steel parts containing from 0.01 to 0.6 percent by weight of silicon by immersion into molten zinc heated to about 470° to 550° C.,
the improvement which comprises using a zinc melt containing lead in a quantity up to the maximally soluble amount at the operational temperature employed but at least about 2 percent by weight based upon the weight of the zinc melt.

4,364,979
COMPOSITION BOARD

Edward I. Dutton, 7 Cockroft Rd., Honey Hills, Florida, Transvaal, South Africa

Filed November 12, 1980, Ser. No. 206,179
Claims priority, application South Africa, November 12, 1979, 79/6056
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—2 24 Claims

1. A particle board comprising a body of structural lignocellulosic particles and filler material bonded together by a binder, said structural particles comprising of at least about 25% chicory root particles and said filler material being selected from the group consisting of coffee grounds, sawdust and vegetable products and comprising less than approximately 50% by weight of the finished board.

10. A method of making a particle board comprising the steps of taking a mixture of ground coffee and chicory root and making up a pulp with coffee and chicory root in the ratio of 50 to 70% chicory root, reducing the water content to between 3% and 12% by weight to form a mixture of dried particles, separating the dried particles into a coarse stream and fine stream, respectively, mixing the dried particles with coarse and fine particles of bagasse, adding binder to the mixtures, forming the particle board with the coarse mixture as a central core and the fine mixture at either side thereof said coarse mixture containing at least about 25% chicory root particles, and finally applying heat and pressure to the board.

4,364,980
HOLLOW BODY SUITABLE FOR RECEIVING DIFFUSIBLE SUBSTANCES, COATED WITH RESIN VARNISH, AND A PROCESS FOR ITS PRODUCTION AND ITS USE

Manfred Mass, Wuppertal, and Günter Walter, Metzingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Stuttgart and Herberts GmbH, Wuppertal, both of, Fed. Rep. of Germany

Filed March 11, 1981, Ser. No. 242,654
Claims priority, application Fed. Rep. of Germany, March 12, 1980, 3009412
Int. Cl.³ B24B *1/00;* B32B *31/00;* B05D *3/00*
U.S. Cl. 428—35 13 Claims

1. Hollow body, suitable for receiving diffusible substances and made of substantially non-elastomeric plastics material coated with varnish resins, characterized in that said body possesses an external surface having a roughness obtained by blasting with a granular blasting agent, measured in profile according to DIN 4768, Part 1, of Rz = from 10 to 150 μm, and R_{max} = from 100 to 250 μm on which a coating, positively linking with that surface and providing a seal against diffusion of liquids and gases present in the body, consisting of a chemically crosslinked polyurethane resin is located in a layer thickness of from 60 to 800 μm.

8. Process for the production of a hollow body according to claim 1, characterised in that the external surface of the plastics hollow body is roughened to a roughness, measured in profile,
of Rz = from 10 to 150 μm
and R_{max} = from 100 to 250 μm
and, subsequently, coated with a varnish, based on a chemically crosslinkable two-component polyurethane resin, in a layer thickness of from 60 to 800 μm, and dried at temperatures of between 20° and 80° C.

4,364,981

THREE LAYER FILM HAVING A CORE LAYER OF LOW PRESSURE, LOW DENSITY POLYETHYLENE

Jerome T. Horner, Indian Head Park; John Anthony, Downers Grove, both of Ill., and William A. Fraser, Princeton, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 108,281, Dec. 28, 1979, abandoned. This application June 3, 1981, Ser. No. 270,099

Int. Cl.[3] B32B *7/02;* B28B *3/20;* B32B *27/08;* B65D *1/00*

U.S. Cl. 428—35 8 Claims

1. A flexible co-extruded three-layer film comprising outer layers of high pressure, low density, polyethylene and a core layer of low pressure, low density polyethylene, said film having been produced by a conventional blown film tubular extrusion process at a throughput rate of from about 4 to about 25 pounds per hour per inch of die at a process temperature of from about 350° F. to about 600° F., said film being characterized as free of melt fracture and having a tensile strength in the transverse direction of at least about 4.0 pounds per inch.

7. A bag formed from the film of claim 1 wherein the film has been produced at a throughput rate of from about 4 to about 20 pounds per hour per inch of die at a process temperature of from about 350° F. to about 470° F.

4,364,982

GASKETS

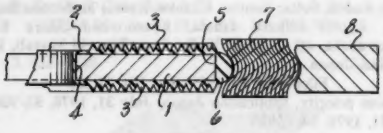
Colin Gee, Mirfield, England, assignor to Flexitallic Gaskets Limited, Yorkshire, England

Filed December 5, 1980, Ser. No. 213,492

Claims priority, application United Kingdom, December 15, 1979, 7943295

Int. Cl.[3] F16J *15/00;* F16L *21/04;* F16J *9/04*

U.S. Cl. 428—65 6 Claims



1. In a spiral wound gasket the improvement comprising the provision of an inner ring coated with an elastomer material, said inner ring lying radially inwardly of and coplanar with said gasket, said inner ring being in the form of an annulus having two opposed substantially flat faces as the major faces of said annulus, and on at least one of said major faces the elastomer material is formed into a sealing profile.

4,364,983

MULTIFILAMENT YARN OF INDIVIDUAL FILAMENTS OF THE MULTICOMPONENT MATRIX/SEGMENT TYPE WHICH HAS BEEN FALSETWISTED, A COMPONENT THEREOF SHRUNK, A COMPONENT THEREOF HEATSET; FABRICS COMPRISING SAID

Walter Brücher, Wuppertal; Karl H. Hense, Erlenbach, and Reiner Modtler, Wuppertal, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed 1980, Ser. No. 125,097

Claims priority, application Fed. Rep. of Germany, March 2, 1979, 2908101; May 7, 1980, 8012389

Int. Cl.[3] D02G *1/20;* D03D *27/00*

U.S. Cl. 428—85 14 Claims

1. A multifilament yarn of individual filaments of the multicomponent matrix/segment type containing the individual filaments essentially as matrix segment and at least three individual filaments split off therefrom as segment fibers, whereby the segment fibers have been shrunk at least about 10% with respect to the matrix fiber, wherein said individual filaments of the yarn exhibit a falsetwist texture and said individual filaments are bonded to each other within the yarn unit at irregular intervals by means of bonding sites involving all or part of the filament cross section.

14. A process for the production of a textile sheet structure comprising falsetwisting a multifilament yarn of individual filaments of the multicomponent matrix/segment type at a heatsetting temperature in the range from about 180° C. to about 240° C., whereby said individual filaments are bonded to each other at from 10 to 40 bonding points per meter, forming a textile sheet structure from said multifilament yarn and subjecting said textile to treatment with an organic solvent which will lower the zero shrinkage temperature of the segment polymer(s) by at least 160° C., and simultaneously, subjecting said textile sheet structure to a milling treatment.

4,364,984

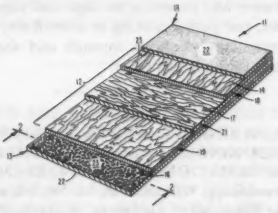
SURFACED ORIENTED STRAND BOARD

Irvin Wentworth, Menlo Park, Calif., assignor to Bison-Werke, Bahre & Greten GmbH & Co., KG, Springe, Fed. Rep. of Germany

Filed 1981, Ser. No. 227,797

Int. Cl.[3] B32B *5/12;* D04H *1/16*

U.S. Cl. 428—106 8 Claims



1. A surfaced multilayer wood composition structure comprising:

a multilayer core structure including first and at least second core layers, each core layer formed principally of adhesively bonded wood strands having an average length substantially greater than their average width, said wood strands have fiber elements extending generally parallel to the length of the strands and are oriented to define a selected mean length direction, said core layers adhesively bonded together with the selected mean length direction of the wood strands forming each core layer transverse to the selected mean length direction of the wood strands forming the adjacent core layer to which said each core layer is bonded; and

a first surface layer formed principally of adhesively bonded wood fines having an average width and thickness less than the average width of the wood strands forming said core layers, some of said wood fines elongated, said wood fines distributed throughout said first surface layer in an unoriented graduated size pattern from a first surface to a second surface with the wood fines of progressively larger width and thickness closer to said first surface, said first surface layer adhesively bonded to an exposed surface of one of said core layers with its first surface including elongated wood fines against said exposed surface.

4,364,985

POROUS SHEET

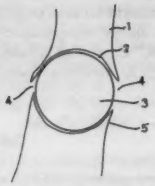
Mitsuru Tokuyama, Utsunomiya; Kenji Ohki, Chiba; Masayuki Sagae, Tochigi, and Kaoru Tsujii, Utsunomiya, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed May 29, 1981, Ser. No. 268,204

Claims priority, application Japan, May 29, 1980, 55-71864

Int. Cl.³ B32B *5/16, 27/14*

U.S. Cl. 428—149 **10 Claims**



1. A liquid-impermeable, vapor-permeable, thin, flexible, porous sheet made from a composition comprising a blend of thermoplastic resin and solid filler particles, said thermoplastic resin forming a matrix in which said filler particles are dispersed, said solid filler particles extending to the opposite surfaces of said sheet, said thermoplastic resin matrix being spaced from the surfaces of said solid filler particles thereby to provide apertures surrounding said solid filler particles, the portions of said thermoplastic matrix on the opposite surfaces of said sheet that overlie the outermost portions of said solid filler particles having been removed by abrasion or buffing so that said outermost portions of said solid filler particles are uncovered and exposed and said apertures form passages that extend between and penetrate through said opposite surfaces of said sheet, said passages being of a small size so that liquid cannot substantially permeate through said sheet and vapor can permeate through said sheet.

4,364,986

DYE-CONTAINING LAYER OF A FILM-FORMING POLYMERIC BINDER AND THE USE THEREOF IN AN INFORMATION RECORDING ELEMENT

Dirk J. Zwanenburg; Wilhelmus P. M. Nijssen, and Caspert G. I. van der Staak, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 172,787, Jul. 28, 1980, abandoned. This application October 6, 1980, Ser. No. 194,507

Claims priority, application Netherlands, August 1, 1979, 7905914

Int. Cl.³ B32B *3/00;* G01D *15/34*

U.S. Cl. 428—156 **6 Claims**

1. An information recording element for optically recording optically readable information comprising a disc-shaped substrate on one surface of which there is present an optically readable servo track which has at least partially a relief structure of servo areas situated alternatively at a higher and a lower level and on which servo track there is present, as a recording layer, a mixture of a dye and a copolymer (1:1) of methyl vinyl ether and maleic anhydride or a semi-ester of said copolymer and an aliphatic alchohol which may be substituted with an aromatic radical and contains 1–8 carbon atoms.

4,364,987

FIRE DOOR CONSTRUCTION

Walter A. Goodwin, Mississauga, Canada, assignor to Cawm-Crete International Limited, Ontario, Canada

Filed August 27, 1981, Ser. No. 296,794

Claims priority, application Canada, May 14, 1981, 377574

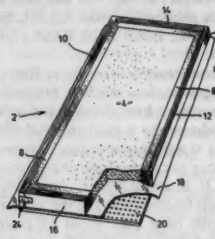
Int. Cl.³ B32B *23/02;* E04C *2/34;* E04B *1/74;* B28B *1/16*

U.S. Cl. 428—192 **9 Claims**

1. A core for a fire-resistant door comprising wooden stiles and rails forming the peripheral edges of said core;

a slab filling the space between the surfaces of and surrounded by said stiles and rails;

said slab comprising a cured mixture of magnesium oxychloride containing inclusions of fibreglass strands, and perlite.



5. A method of making a fire-resistant door core comprising the steps of forming a rectangular frame of stiles and rails;

fastening a sheet of planar material to the underside of said frame to provide a bottom to a mold formed by the cavity surrounded by said frame stiles and rails;

pouring a mixture of material curable to form a core slab in the cavity formed by said frame;

allowing said material to cure and bond to said stiles and rails to form an inner panel.

4,364,988

MAGNETIC RECORDING MEDIUM

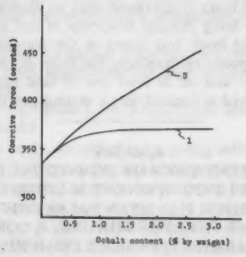
Haruo Andoh, Suita; Susumu Kitaoka, Kyoto; Toshinobu Sueyoshi, Kyoto; Hikaru Ishida, Kyoto, and Akira Kato, Takarazuka, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed July 27, 1979, Ser. No. 61,253

Claims priority, application Japan, July 31, 1978, 53/93891; July 31, 1978, 53/93895

Int. Cl.³ G11B *5/70*

U.S. Cl. 428—212 **11 Claims**

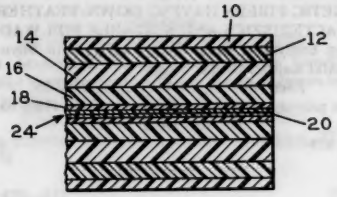


1. A magnetic recording medium which comprises as a recording element a substrate with a single layer of a composition on the surface thereof comprising a mixture of cobalt-containing iron oxide magnetic particles consisting essentially of ferromagnetic iron oxide particles containing cobalt in the most outer layer thereof and γ-ferric oxide particles, said cobalt-containing iron oxide magnetic particles and γ-ferric oxide particles being mixed in the ratio of 10:90 to 50:50 by weight, said cobalt-containing iron oxide magnetic particles having a coercive force of 20 to 100 oersteds higher than the coercive force of the γ-ferric oxide particles.

4,364,989
SNACK FOOD PACKAGING MATERIAL

LaMont E. Moyle, Milford, N.J., assignor to Rexham Corporation, New York, N.Y.

Filed March 19, 1981, Ser. No. 245,698
Int. Cl.³ B32B 7/02
U.S. Cl. 428—216 11 Claims



1. A flexible, heat sealable packaging material which comprises a lamination of

(a) an outer film of polypropylene,

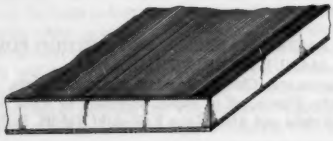
(b) a laminate of low density polyethylene, and

(c) an inner coextruded film which includes a coextrusion of high density polyethylene, polypropylene and ethylene methyl acrylate, said ethylene methyl acrylate having a coating of a polyvinylidene chloride emulsion on its exposed surface.

4,364,990
CONSTRUCTION MATERIAL FOR STRINGED MUSICAL INSTRUMENTS

Daniel W. Haines, Columbia, S.C., assignor to The University of South Carolina, Columbia, S.C.

Filed March 31, 1975, Ser. No. 563,387
Int. Cl.³ B32B 7/02
U.S. Cl. 428—218 12 Claims



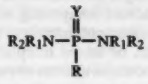
1. A construction material especially suitable for use in the manufacture of soundboards and panels used in stringed musical instruments comprising a mat of fibers embedded in a resin matrix in which said fibers have a Young's modulus of elasticity greater than 18×10^{11} dynes/cm^2 and a density less than 2 g/cc and are oriented in such manner as to effect a bending stiffness ratio of at least 4:1 in said construction material bonded to a mat of cardboard having a density within the range of 0.15 g/cc and 1 g/cc.

4,364,991
FIRE RESISTANT COMPOSITIONS AND COMPOSITES

Norman R. Byrd, Villa Park, and Daniel C. Peek, Long Beach, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed September 25, 1980, Ser. No. 190,741
Int. Cl.³ 524 137; B32B 27/38, 27/36, 27/34, 27/30, 27/28, 27/18; C08K 5/53, 5/50
U.S. Cl. 428—265 51 Claims

22. A fire resistant composition having low thermal conductivity, consisting essentially of a mixture of a resin selected from the group consisting of epoxies and condensation polymers; and a phosphorylated amide as an additive; and which resin is selected so that it has the following properties and characteristics (1) the additive is soluble in the resin and (2) when contacted with the additive such resin will form a stable resin char when heated by a flame to an elevated temperature of about 2000 degrees F. and (3) the fire resistance of the resin is increased and its thermal conductivity is decreased when contacted by the additive and so heated; said composition being capable of being cured and permanently bonded to a structural substrate to improve char characteristics and provide low thermal conductivity thereto and to permit such substrate to maintain structural integrity thereof, said additive being solubilized in said resin to form a homogeneous composition and employed in an amount sufficient to form said stable resin char when said composition is heated by a flame to an elevated temperature of about 2000 degrees F.; said phosphorylated amide having the following general formula



where Y is O or S, R is selected from the group consisting of H, alkyl containing from about 1 to about 6 carbon atoms, cycloalkyl containing from about 5 to about 7 carbon atoms, aryl containing from about 6 to about 14 carbon atoms, the corresponding halogenated alkyl and aryl groups, nitroaryl containing about 6 14 carbon atoms, heterocyclic containing 5 to 6 members in the heterocyclic nucleus, and O, N or S as hetero atoms, and where R_1 and R_2 can be the same or different, and are selected from the group consisting of H, alkyl, aryl, and cycloalkyl, all as defined above for R, amino, alkylamino containing from about 1 to about 8 carbon atoms in the alkyl group, arylamino containing from about 6 to about 14 carbon atoms, aliphatic acyl containing from about 1 to about 7 carbon atoms, and aroyl containing from about 7 to about 11 carbon atoms.

4,364,992
TWO LAYER ABSORBENT ARTICLE WITH SUPER WATER-ABSORBING POLYMER

Osamu Ito, Utsunomiya, and Kazunori Nishizawa, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed June 12, 1981, Ser. No. 273,156
Claims priority, application Japan, June 23, 1980, 55/84995
Int. Cl.³ B32B 5/16
U.S. Cl. 428—283 7 Claims

An absorbent article, comprising: an upper, first, absorbing layer having a density, in both the dry state and the wet state, of less than 0.045 g/cm^3 when measured under a load of 35 g/cm^2, wherein the density in the wet state does not include the density of absorbed liquid, said first absorbing layer weighing from 15 to 50 g/m^2, said first absorbing layer being a felt made of bonded fibrous webs and being comprised of from 30 to 60% by weight of hollow polyester fibers and from 30 to 50% by weight of heat-fusible fibers; and a lower, second,

absorbing layer having a super water-absorbing polymer fixed thereto.

4,364,993

SIZED CARBON FIBERS, AND THERMOPLASTIC POLYESTER BASED COMPOSITE STRUCTURES EMPLOYING THE SAME

Robert Edelman, Staten Island, N.Y.; Paul E. McMahon, North Plainfield, and Gene P. Daumit, Berkeley Heights, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed July 14, 1980, Ser. No. 167,987

Int. Cl.³ B05D *5/10;* **C08K** *7/06;* **C09J** *3/16;* **D04H** *1/58*

U.S. Cl. 428—288 **7 Claims**

1. At least one carbon fiber having coated on the surface thereof a sizing composition of sorbitol polyglycidyl ether having a total chlorine content of at least 10%, by weight, based on the weight of the sorbitol polyglycidyl ether, and an epoxide equivalent weight of from about 160 to about 230.

4. A composite structure comprising a continuous matrix of a thermoplastic polyester comprising a poly (alkylene terephthalate, isophthalate, or mixed terephthalate, isophthalate), said alkylene groups containing from about 2 to about 4 carbon atoms, and a reinforcing agent contiguous and firmly bonded thereto, said reinforcing agent comprising carbon fibers sized with a sizing composition of sorbitol polyglycidyl ether having a total chlorine content of at least 10%, by weight, based on the weight of the sorbitol polyglycidyl ether and an epoxide equivalent weight of from about 160 to about 230.

4,364,994

PROCESS AND COMPOSITION FOR MINIMIZING ACCUMULATION OF MOISTURE ON A COLD SURFACE EXPOSED TO HUMID CONDITIONS AND PRODUCT OBTAINED THEREBY

Ernst R. Fogelberg, Vällingby, Sweden, assignor to AB Bonnierföretagen, Stockholm, Sweden

Filed August 29, 1980, Ser. No. 182,625

Int. Cl.³ B05D *5/04*

U.S. Cl. 428—316.6 **16 Claims**

1. A process for minimizing accumulation of moisture on a cold surface exposed to humid conditions which tend to cause condensation on the surface, which comprises painting said surface with a liquid coating composition having dispersed in a volatile vehicle water-absorptive particles in admixture with a resinous binder in an amount sufficient to bind said particles together in an adherent coating on said surface but insufficient to occlude the water absorptivity of the particles, said particles comprising a mixture of cellulose fibers and water-absorptive, heat-expanded perlite having a bulk density less than 150 kgs/m^3, the pores of which particles are filled with said volatile vehicle when the liquid coating composition is applied, and allowing or causing the volatile vehicle to evaporate from the applied coating and from the pores of the particles therein, and in which the heat-expanded perlite is present in an amount of about 5 percent to about 15 percent by weight, the cellulose fibers are present in an amount of about 1 percent to about 5 percent by weight, the binder is present in an amount of about 15 percent to about 40 percent by weight and, the volatile vehicle in the amount of about 20 percent to about 45 percent by weight.

4,364,995

METAL/METAL OXIDE COATINGS

George H. Crawford, White Bear Lake; Edward J. Downing, St. Paul, and Roy G. Schlemmer, Oakdale, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed 1981, Ser. No. 231,500

Int. Cl.³ B32B *15/04, 15/08*

U.S. Cl. 428—336 **12 Claims**

1. An article comprising a substrate having on at least one surface thereof a coating comprising at least two components of (a) metal and (b) metal oxide or metal sulfide or combinations thereof of between 15 A and 5×10^4 A in thickness, said coating being characterized by having a composition which varies its proportions of said at least two components through a thickness of at least 15 A in a continuous manner, said variation in proportions being further characterized by the ratio of said components only increasing or only decreasing through the thickness of the coating.

4,364,996

SYNTHETIC FIBERS HAVING DOWN/FEATHER-LIKE CHARACTERISTICS AND SUITABLE FOR WADDING

Hiroshige Sugiyama, Otsu, Japan, assignor to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed May 28, 1981, Ser. No. 268,035

Claims priority, application Japan, May 29, 1980, 55-72268

Int. Cl.³ D01F *6/62*

U.S. Cl. 428—369 **4 Claims**

1. A synthetic fiber for wadding which has a plurality of projections in its cross section and a section deformation ratio (S) of not less than $5000/\sqrt{D}$ (wherein D is a monofiber denier) and which has the following physical characteristics:

Monofiber denier (D, denier): 0.1 to 3;

Coefficient of inter-fiber static friction (μ_s): not more than 0.14;

Crimp number (CN, number/25 mm): 4 to 14;

Ratio of crimp index and crimp number (Ci(%)/CN): 0.6 to 1.8;

$H_{0.2}$(cm): not less than 7.3;

$H_{0.2}/H_{25}$ (cm/cm): not less than 6.5;

δ_D (g/cm^2/cm): not more than 0.4.

4,364,997

CLUTCH FACING MATERIAL AND METHOD FOR MANUFACTURING THE SAME

Yasunobu Yamamoto, Chiryu; Toshiaki Sakabe, Toyota, and Eizi Hamada, Handa, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Aisin Kako Kabushiki Kaisha, both of, Japan

Filed May 19, 1981, Ser. No. 265,241

Claims priority, application Japan, May 24, 1980, 55-69488

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—372 **8 Claims**

1. A clutch facing comprising strings of asbestos having a material applied thereto, said material comprising a first additive consisting essentially of a mixture of solid cashew resin and graphite, and a second additive comprising cashew dust.

4,364,998

SPUNLIKE YARNS

Lun-Yan Wei, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 20, 1981, Ser. No. 285,023

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—399 **8 Claims**

1. A yarn consisting essentially of a plurality of synthetic fibrous elements having an irregular and varying cross section and being forked and merged in a fortuitous manner, the cross-sectional area and cross-sectional shape of each fibrous element changing along its length and some of said fibrous elements terminating in free ends, the cross-sectional area and cross-sectional shape of most of said fibrous elements being of approximately the same cross-sectional area and cross-sectional shape as those fibrous elements that terminate in free ends, and those

fibrous elements that do not have approximately said area and said shape being forked to form fibrous elements of approximately said area and said shape, many of said fibrous elements having at least one ragged side that extends longitudinally of the fibrous elements, the fibrous elements being frequently entangled along the length of the yarn, said yarn having 10 to 150 free ends per centimeter of yarn length.

4,364,999

HEAT SENSITIVE RECORD SHEET

Katsuichi Motohashi; Toshio Obara; Kazuo Kaneko, and Masahiko Yamaguchi, all of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed August 24, 1981, Ser. No. 295,371

Claims priority, application Japan, September 17, 1980, 55/127976

Int. Cl.³ B41M *5/18*

U.S. Cl. 428—411 3 Claims

1. A heat sensitive record sheet which comprises a coated layer comprising 2-(2-chlorophenyl)amino-6-di-propyl- or butyl-aminofluoran.

4,365,000

MOLDED BODIES OF VULCANIZED RUBBER HAVING A VULCANIZED-ON LAYER OF VARNISH

Hanns P. Müller, Odenthal; Kuno Wagner, Leverkusen; Johannes Blahak, Gauting-Buchendorf, and Hermann Menk, Bodolz, all of Fed. Rep. of Germany, assignors to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

Filed March 28, 1980, Ser. No. 134,884

Claims priority, application Fed. Rep. of Germany, April 21, 1979, 2916271

Int. Cl. B32B *27/40*

U.S. Cl. 428—423.9 5 Claims

1. Method of manufacturing an article of vulcanized rubber having a strongly attached urethane varnish layer, which comprises employing as the substrate to be coated, a body with at least part of its surface composed of unvulcanized rubber containing olefinic double bonds, applying to the rubber surface of the body before vulcanization of said rubber, a urethane varnish which contains a binding agent with olefinic, unsaturated groups which on subsequent vulcanization of the coated body will take part in the vulcanization reaction; and subsequently subjecting the coated body to vulcanization with the binding agent entering the vulcanization reaction causing the urethane varnish to be strongly connected with the surface of the rubber containing the olefinic double bonds.

5. An article of vulcanized rubber having a strongly attached urethane varnish layer produced by the process of claim 1.

4,365,001

LAMINATES OF IMPROVED FIRE RESISTANCE

Nicolas Meyer, Bully les Mines, and Michel Cousin, Loison sous Lens, both of France, assignors to Societe Chimique Des Charbonnages, Paris, France

Filed April 22, 1981, Ser. No. 256,368

Claims priority, application France, April 24, 1980, 80 09192

Int. Cl.³ B32B *27/08, 27/36, 27/42;* C09K *3/28*

U.S. Cl. 428—480 10 Claims

1. In a laminate having a reinforced phenolic resin substrate, a hardened furan resin layer bonded to at least one side of said substrate, and a moderately inflammable thermosetting unsaturated polyester resin layer bonded to the obverse side of said furan resin layer,

the improvement wherein said hardened furan resin layer is hardened by using as the hardener a substantially anhydrous boric anhydride solution comprising at least 5% by weight of boric anhydride; whereby sufficient boron is introduced into said furan resin layer as boric anhydride to improve the fire resistance of the laminate without requiring the incorporation of boron into the polyester resin layer.

4,365,002

COATED PLASTIC FILMS

Shigeyuki Takahashi; Shozo Yamamoto, both of Amagasaki, and Nagayoshi Tsukane, Himeji, all of Japan, assignors to Daicel Chemical Industries Ltd., Osaka, Japan

Filed June 17, 1981, Ser. No. 274,438

Claims priority, application Japan, June 25, 1980, 55-87183

Int. Cl.³ B05D *3/02;* B32B *27/08, 27/42;* B37B *23/08*

U.S. Cl. 428—483 17 Claims

1. A coated plastic film possessing good printability, slip properties, oxygen and moisture barrier properties and transparency, comprising a plastic film and a coating thereon, said coating including a thermoplastic base resin and a crosslinked, electrostatically neutral synthetic resin in an amount of from 0.01–2 parts by weight per 100 parts by weight of said thermoplastic resin, said synthetic resin having a softening temperature of above 100° C. and an average particle diameter of 1–20 microns.

5. The coated plastic film according to claim 1, wherein the plastic film is a polypropylene film, a polyester film or a cellulosic resin film.

4,365,003

SILICATE TREATMENT FOR COATED SUBSTRATE

Claudia L. Danforth, Chardon, and Jon A. deRidder, Madison, both of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed 1981, Ser. No. 224,094

Int. Cl.³ B22F *5/00;* C23F *7/24*

U.S. Cl. 428—552 14 Claims

1. A coated metal substrate protected with an undercoating-/topcoating composite which is resin-free and contains particulate metal, with the proviso that only the undercoating of the composite contains the particulate metal while the total of the coating composite is substantially resin-free, each coating being established from compositions curable to water resistant protective coatings, with the undercoating being applied as a substantially resin free composition containing, in liquid medium, a hexavalent-chromium-providing substance plus the particulate metal and in an amount sufficient to provide, upon curing, above 10 but not substantially above about 5000 milligrams per square foot of coated substrate of particulate metal, and said topcoating being substantially resin free and containing silica substance in liquid medium in an amount sufficient to provide above about 50 milligrams per square foot of coated substrate of silica substance in cured coating.

4,365,004

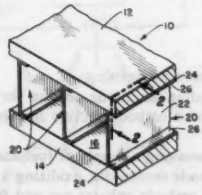
METALLIC CORE PANEL AND METHOD OF MAKING SAME

James R. Campbell, South Laguna, and Roy L. Anspach, Anaheim, both of Calif., assignors to Thomas P. Mahoney and Donald A. Ruston, both of Balboa Island, Calif.

Division of Ser. No. 948,012, Oct. 2, 1978, Pat. No. 4,254,188. This application 1981, Ser. No. 227,654

Int. Cl.³ B23P *3/00;* B32B *3/06*

U.S. Cl. 428—593 5 Claims



1. In a metallic, core reinforced panel, the combination of: first and second face sheets disposed in spaced relationship

with each other to define a cavity between the confronting inner surfaces thereof; a core structure disposed in said cavity and secured to said face sheets by a plurality of weldments; and an additional metallic element secured to the external surface of one of said face sheets by said weldments.

4,365,005

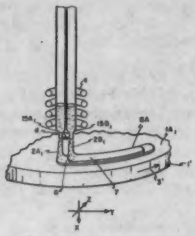
METHOD OF FORMING A LAMINATED RIBBON STRUCTURE AND A RIBBON STRUCTURE FORMED THEREBY

August F. Witt, Winchester, Mass., and Ramaswamy V. Raman, Columbus, Ohio, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 950,965, Oct. 13, 1978, Pat. No. 4,229,231. This application March 3, 1980, Ser. No. 126,762

Int. Cl.³ B32B *15/04*; C23C *1/00*; H01F *1/04*

U.S. Cl. 428—611 **11 Claims**



1. A multi-layered ribbon that comprises, a supporting substrate having a thickness in the range from about 10 to 50 micrometers; and at least one electrically active layer formed upon the substrate and in electrical contact therewith, the thickness of the active layer being in the range of about 10 to 50 micrometers.

4,365,006

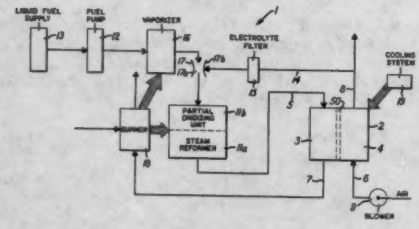
FUEL CELL SYSTEM FOR MOBILE APPLICATIONS

Bernard S. Baker, Brookfield Center, Conn., assignor to Energy Research Corporation, Danbury, Conn.

Filed March 26, 1981, Ser. No. 247,877

Int. Cl.³ H01M *8/04*

U.S. Cl. 429—17 **39 Claims**



1. A fuel cell system comprising:

a fuel cell including an anode section for receiving fuel process gas and a cathode section for receiving oxidant process gas;

and means for receiving a supply of fuel and gas exhausted from said cathode section for oxidizing a portion of said fuel with said cathode exhaust gas and for converting a portion of said fuel to said fuel process gas by directly utilizing said oxidized portion of fuel, said converting being with at least the water in the products in said cathode exhaust gas and at least the water in the products in said oxidized portion of fuel.

4,365,007

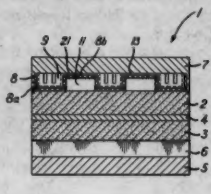
FUEL CELL WITH INTERNAL REFORMING

Hansraj C. Maru, Brookfield Center, and Pinakin S. Patel, Danbury, both of Conn., assignors to Energy Research Corporation, Danbury, Conn.

Filed June 12, 1981, Ser. No. 272,947

Int. Cl.³ H01M *8/18*

U.S. Cl. 429—19 **35 Claims**



1. An electrochemical cell system comprising:

a gas diffusion electrode;

first passage means in communication with said electrode;

second passage means having a catalyst for reforming hydrocarbons and including a gas porous member in communication with said first passage means;

and means for establishing a differential pressure between said first and second passage means so as to promote gas flow from said second passage means through said gas-porous member to said first passage means, whereby the hydrocarbon content of supply gas introduced into said second passage means is reformed by said catalyst and said reformed hydrocarbon content is aided by said differential pressure to pass through said gas-porous member into said first passage means to said gas-diffusion electrode for electrochemical reaction, and electrolyte vapor in said first passage means is retarded by said differential pressure from contacting and passing through said gas-porous member to said second passage means.

4,365,008

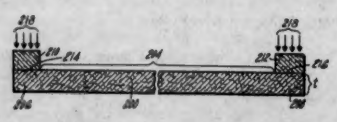
DENSIFIED EDGE SEALS FOR FUEL CELL COMPONENTS

Anthony J. DeCasperis, South Windsor; Richard J. Roethlein, Stafford Springs, and Richard D. Breault, Coventry, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed July 27, 1981, Ser. No. 287,464

Int. Cl.³ H01M *2/00, 4/88*; B29C *25/00*; C01B *31/00*

U.S. Cl. 429—36 **3 Claims**



1. A component for use in a fuel cell stack comprising:

a fully graphitized sheet of gas porous, thermosetting resin bonded, carbon fibers, said sheet having a top surface and a bottom surface and comprising a central portion bordered by a pair of parallel edge portions, said central and edge portions having substantially the same thickness and being of essentially the same material, the density of said sheet in said edge portions being two to three times greater than the density of said sheet in said central portion, said edge portion having a mean pore size of less than

about 10 microns, and an 80% pore size range with an upper limit no greater than about 20 microns.

4,365,009
METHOD OF IMPROVING THE ION SELECTIVITY OF MEMBRANES

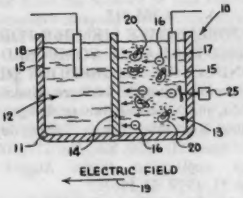
Patrick G. Grimes, and Richard J. Bellows, both of Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 128,822, Mar. 10, 1980, Pat. No. 4,259,417. This application August 18, 1980, Ser. No. 178,993

The portion of the term of this patent subsequent to March 31, 1998, has been disclaimed.

Int. Cl.³ H01M *2/16*

U.S. Cl. 429—50 **25 Claims**



1. In an electrochemical cell, comprising: a first fluid-containing compartment; a second fluid-containing compartment; a nonselective porous membrane disposed between said first and second fluid-containing compartments; A method of modifying the ion selectivity of said membrane comprising the steps of:

(a) passing ions through said membrane; and

(b) migrating a polyelectrolyte disposed in a fluid of at least one of said compartments towards, and forming an ionic barrier at, said membrane in response to the ionic flow through said membrane, said polyelectrolyte modifying the ion selectivity of said membrane by causing substantially only selected ions to pass through said membrane.

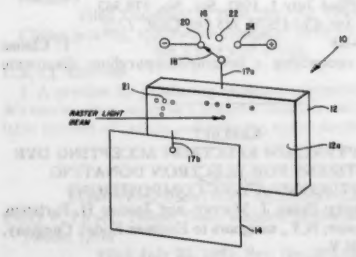
4,365,010
PHOTOELECTROCHROMIC GENERATOR AND DISPLAY DEVICE

Allen J. Bard; Fu-Ren F. Fan, both of Austin, Tex., and Benjamin Reichman, Birmingham, Mich., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed 1981, Ser. No. 230,850

Int. Cl.³ H01M *6/36*; G02F *1/01*

U.S. Cl. 429—111 **6 Claims**



1. A device usable as a photoelectric cell or as a rechargeable storage battery, comprising:

a semiconductor first electrode comprising P-GaAs provided with a first output means connectable to an external circuit,

a metallic second electrode provided with a second output means connectable to the external circuit, and

an aqueous solution comprising heptyl viologen,

the first and second electrodes being immersed in the aqueous solution and illuminatable by light radiation for generating an output at the output means.

4,365,011
PROCESS FOR PREPARING PIECES COMPOSED OF SOLID ELECTROLYTE BASED ON STABILIZED ZIRCON AND TO PIECES OBTAINED BY THIS PROCESS

Herve Bernard, Grenoble, and Jean-Claude Viguie, Eybens, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed 1981, Ser. No. 228,897

Claims priority, application France, 1981, 80 02788

Int. Cl.³ H01M *8/12*

U.S. Cl. 429—193 **17 Claims**

1. Process for preparing a piece of solid electrolyte based on stabilized zircon, comprising the following steps of:

(a) preparing an alcoholic solution of a salt of zirconium, a salt of a metal stabilizing the zircon and an aluminium salt, the content of said salt of aluminum in said solution being such that it corresponds to a composition of solid electrolyte comprising up to 2% in moles of alumina;

(b) forming from said solution a coprecipitate of hydroxide of zirconium, hydroxide of said metal and aluminium hydroxide;

(c) separating the precipitate thus obtained;

(d) washing said precipitate by means of a hydrophilic solvent to eliminate the major part of the water;

(e) drying the precipitate thus washed at a temperature lower than 100° C. to eliminate the rest of the water;

(f) calcining it in air;

(g) forming, from the powder obtained by calcination of said precipitate, a blank of said piece by compression of said powder;

(h) and sintering the blank thus obtained in an atmosphere of hydrogen.

4,365,012
LIGHT SENSITIVE RECORDING MATERIAL

Jürgen Hocker, Bergisch Gladbach, and Erwin Ranz, Leverkusen, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

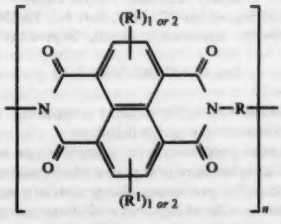
Filed 1981, Ser. No. 222,085

Claims priority, application Fed. Rep. of Germany, 1980, 3000167

Int. Cl.³ G03C *5/24, 1/52*

U.S. Cl. 430—19 **3 Claims**

1. A process for producing reversible images in a light-sensitive recording material which comprises the step of imagewise exposing to light, a supported layer containing a light-sensitive substance corresponding to the formula



in which

R represents a divalent aliphatic group containing an electron donor function;

R^1 represents hydrogen, halogen, SO_3H, CN, $COOR^2$, $N(R^3)_2$, OR^4, or NO_2;

R^2, R^3, and R^4 represent hydrogen or C_1–C_6 alkyl and

n represents an integer of from 2 to 1,000 and subsequently reverting said recording material to a monochromatic state.

4,365,013

ELECTROPHOTOGRAPHIC MEMBER

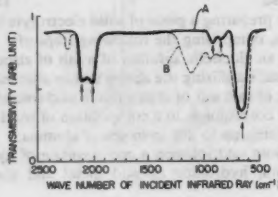
Sachio Ishioka, Tokyo; Eiichi Maruyama, Kodaira; Yoshinori Imamura, Hachioji; Hirokazu Matsubara, Hamuramachi, and Shinkichi Horigome, Tachikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 28, 1981, Ser. No. 287,633

Claims priority, application Japan, July 28, 1980, 55-102530

Int. Cl.³ G03G *5/08*

U.S. Cl. 430—57 **7 Claims**



1. In an electrophotographic member having at least a supporter and a photoconductor layer which is principally formed of amorphous silicon; an electrophotographic member characterized in that said amorphous silicon contains at least 50 atomic-% of silicon and at least 1 atomic-% of hydrogen as an average within said layer, and that a part which is at least 10 nm thick from a surface or/and interface of said photoconductor layer toward the interior of said photoconductor layer has a hydrogen content in a range of at least 1 atomic-% to at most 40 atomic-% and an optical forbidden band gap in a range of at least 1.3 eV to at most 2.5 eV and also has the property that an intensity of at least one of peaks having centers at wave numbers of approximately 2,200 cm^{-1}, approximately 1,140 cm^{-1}, approximately 1,040 cm^{-1}, approximately 650 cm^{-1}, approximately 860 cm^{-1} and approximately 800 cm^{-1} in an infrared absorption spectrum which are attributed to a bond between silicon and oxygen does not exceed 20% of a higher one of the intensitites of peaks having centers at wave numbers of approximately 2,000 cm^{-1} and approximately 2,100 cm^{-1} which are attributed to a bond between silicon and hydrogen.

4,365,014

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

Kiyoshi Sakai; Mitsuru Hashimoto; Masafumi Ohta, all of Numazu, and Masaomi Sasaki, Shizuoka, all of Japan, assignors to Ricoh Company, Limited, Tokyo, Japan

Filed September 27, 1979, Ser. No. 79,406

Claims priority, application Japan, September 29, 1978, 53-119949

Int. Cl.³ G03G *5/06, 5/14*

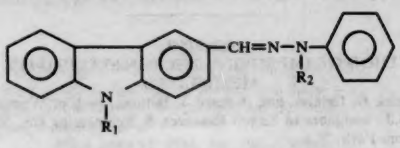
U.S. Cl. 430—59 **6 Claims**

1. An electrophotographic element comprising:

an electroconductive support member;

a charge carrier producing layer comprising an azo pigment having a styrylstilbene group, as a photoconductive material effective for producing charge carriers; and

a charge transport layer adjacent said charge carrier producing layer, which consists essentially of a hydrazone having the formula



wherein R_1 is methyl, ethyl,2-hydroxyethyl, or 2-chloroethyl, and R_2 is methyl, ethyl, benzyl or phenyl, and a binder resin selected from the group consisting of polyamide, polyurethane, polyester, epoxy resin, polyketone, polyvinyl ketone, polystyrene, poly-N-vinyl carbazole and polyacrylamide.

4,365,015

PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY COMPOSED OF A PHOTOCONDUCTIVE AMORPHOUS SILICON

Nobuo Kitajima, Toride; Shunichi Ishihara, Kodaira; Yuji Nishigaki, Kawasaki, and Nobuko Kitahara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed August 11, 1980, Ser. No. 177,118

Claims priority, application Japan, August 20, 1979, 54-105671; August 21, 1979, 54-106759

Int. Cl.³ G03G *5/08, 5/14*

U.S. Cl. 430—62 **13 Claims**

1. An electrophotographic photosensitive member adapted for use in an electrophotographic process in which a photoconductive layer having electrodes is subjected to imagewise exposure in the presence of a voltage to generate a difference in the distributed voltage between the exposed and unexposed areas due to the change in resistance in the exposed area of said photoconductive layer thereby creating a potential image by the difference in surface potential corresponding to said difference in the distributed voltage, which comprises a photoconductive layer principally composed of amorphous silicon, a number of electrically isolated conductors formed on the surface of the photoconductive layer, and one pair of electrodes arranged at the photoconductive layer, said one pair of electrodes arranged in such a way that a potential applied between said one pair of electrodes can be distributed through each of said isolated conductors.

4,365,016

BENZOTELLUROPYRYLIUM DIKETONATE ELECTRON ACCEPTING DYE SENSITIZERS FOR ELECTRON DONATING PHOTOCONDUCTIVE COMPOSITIONS

Michael R. Detty; Bruce J. Murray, and Jerome H. Perlstein, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 1, 1981, Ser. No. 279,363

Int. Cl.³ C07D *345/00*; G03C *1/72*

U.S. Cl. 430—83 **17 Claims**

1. A dye comprising a benzotelluropyrylium diketonate nucleus.

4,365,017

TELLUROPYRYLIUM ELECTRON ACCEPTING DYE SENSITIZERS FOR ELECTRON DONATING PHOTOCONDUCTIVE COMPOSITIONS

Michael R. Detty; Bruce J. Murray, and Jerome H. Perlstein, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 1, 1981, Ser. No. 279,365

Int. Cl.³ C07D *345/00*; G03C *1/72*

U.S. Cl. 430—83 **15 Claims**

1. A dye comprising a telluropyrylium nucleus.

4. A dye comprising a benzotelluropyrylium nucleus.

4,365,018

IMAGING ELEMENT AND AN IMAGING TECHNIQUE

E. Bryant Crutchfield, Dayton; Richard F. Wright, Chillicothe; Paul C. Adair, Chillicothe; Seth O. Harris, Chillicothe; Dale R. Shackle, Chillicothe, and Dennis L. Williams, Chillicothe, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed May 11, 1981, Ser. No. 262,015
Int. Cl.³ G03C 5/04
U.S. Cl. 430—139 36 Claims

20. A process for imaging which comprises:

positioning adjacent an original an image element including:

a support member,

a light generating unit wherein said light generating unit comprises one or more layers containing at least one reagent of a chemiluminescent reaction system, said system being temporarily prevented from reacting and chemiluminescing by physically separating at least one reagent from the balance of said system, and

a light sensitive imaging layer sensitive to the chemiluminescence of said light generating unit,

activating said light generating unit such that said light generating unit chemilumineses,

image-wise exposing said light sensitive imaging layer with chemiluminescence reflected from said original, and

forming an image in said light sensitive imaging layer.

4,365,019

POSITIVE-WORKING RESIST QUINONE DIAZIDE CONTAINING COMPOSITION AND IMAGING METHOD HAVING IMPROVED DEVELOPMENT RATES

Robert C Daly, Greece ., and John R. Guild, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed August 6, 1981, Ser. No. 290,461
Int. Cl.³ G03C 1/60, 1/72; G03F 7/08
U.S. Cl. 430—190 7 Claims

1. In a positive-working composition sensitive to light or electron beams comprising in admixture a 1,2-quinone diazide condensation product and a sensitivity-enhancing agent;

the improvement wherein said sensitivity-enhancing agent is a heterocyclic compound having one, two or three rings, the nuclear atoms of which consist of carbon atoms and from 2 to 4 nitrogen atoms, at least one of the nitrogen atoms being bonded to hydrogen, said compound having at least two halogen substituents bonded to said nuclear carbon atoms.

4,365,020

METHOD FOR THE PREPARATION OF ANTIBIOTIC SISOMICIN

Istvan Gado; Antonia Jekkel nee Bokany; György Szvoboda; Miklos Jarai; Sandor Piukovich, all of Budapest, and Sandor Istvan, Szentendre, all of Hungary, assignors to CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Filed December 8, 1980, Ser. No. 214,425
Claims priority, application Hungary, 1979, CI 1911
Int. Cl.³ C12P 19/48
U.S. Cl. 435—80 10 Claims

1. A process for producing sisomicin comprising cultivating *Micromonospora rosea,* in a nutrient medium containing assimilable sources of carbon and nitrogen under aerobic conditions.

4,365,021

LOW TEMPERATURE SEALANT GLASS

Perry P. Pirooz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed July 22, 1981, Ser. No. 286,104
Int. Cl.³ C03C 3/10, 3/08
U.S. Cl. 501—15 7 Claims

1. A sealing glass composition consisting essentially of a vitreous lead borate glass in admixture with a sufficient amount of a crystalline beta eucryptite such that together they provide the desired coefficient of expansion for a strong, tightly heremetic, moisture-resistant seal, said beta eucryptite having an average lineral coefficient of thermal expansion of $-123\pm5\times10^{-7}$ (0°–300° C.) in/in°C.

4,365,022

METHOD FOR MANUFACTURE OF HIGH-STRENGTH SINTERED ARTICLE OF SUBSTANCES HAVING β-SILICON NITRIDE TYPE CRYSTAL STRUCTURE

Hideyo Tabata; Yoshitaka Kuwahara, both of Kasugai; Michihide Machida, Nagoya; Shyoichi Kume, Nagoya; Takeo Iga, Nagoya; Kazuo Saitoh, Nagoya, and Shinji Tomura, Seto, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed November 2, 1981, Ser. No. 317,542
Claims priority, application Japan, December 6, 1980, 55-172417; December 6, 1980, 55-172418
Int. Cl.³ C04B 35/58
U.S. Cl. 501—97 6 Claims

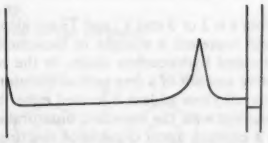
1. A method for the manufacture of a high-strength sintered article of β-silicon nitride composition, which comprises blending 50 to 99.9 wt. % of a composition which, on being burned, acquires the structure of β-silicon nitride composition with 50 to 0.1 wt % of a mixture, as a sintering aid, consisting of BeO, Ga_2O_3, and Al_2O_3 of respective amounts such as to have a Ga_2O_3/BeO ratio in the range of from 2.8 to 9.4, an Al_2O_3/BeO ratio in the range of from 0.0 to 2.6, and an Al_2O_3/Ga_2O_3 ratio in the range of from 0.0 to 1.1, all ratios being ratios by weight, molding the resultant blend, and sintering the molded blend at a temperature in the range of from 1300° to 1850° C.

4,365,023

METHOD FOR MANUFACTURING BLOCK COPOLYMER

Teruo Fujimoto; Mitsuru Nagasawa, both of Nagoya, and Syotaro Ohno, Tokuyama, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed November 13, 1980, Ser. No. 206,562
Claims priority, application Japan, November 27, 1979, 54/152386
Int. Cl.³ B01J 43/00
U.S. Cl. 521—32 7 Claims



1. A method for manufacturing by living anion polymerization a ternary copolymer of a molecular structure formed with a macro-molecule which has a cation exchange group, a macro-molecule which has an anion exchange group and another macro-molecule which does not have any ion exchange group therein linked together into a straight chain, said method comprising: obtaining a crude ternary block copolymer by carrying out block copolymerization of a monomer component which is capable of forming a macro-molecular domain permitting introduction of a cation exchange group thereinto, a monomer component which is capable of forming a macro-molecular domain permitting introduction of an anion exchange group thereinto and a monomer component which is capable of forming another macro-molecular domain which contains no ion exchange group; a process of shaping said crude ternary block copolymer into a desired form; introducing a cation exchange

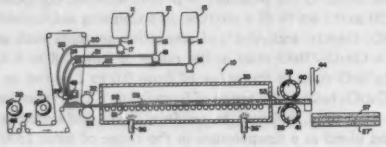
group into said macro-molecular domain which permits introduction of a cation exchange group thereinto; and introducing an anion exchange group into said macro-molecular domain which permits introduction of an anion exchange group thereinto; wherein the percentage by weight of the monomer component which is capable of forming said macro-molecular domain having no ion exchange group is 30–90%, and the percentage by weight of the monomer which is capable of forming said macro-molecular domain permitting introduction of a cation exchange group and that of the monomer component which is capable of forming said macro-molecular domain permitting introduction of an anion group are at least 5% respectively.

4,365,024

POLYOXYALKYLENE/UNSATURATED DIESTER REACTION PRODUCT FOR CELLULAR FOAM STABILIZATION

Richard L. Frentzel, Clearwater, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Filed July 10, 1981, Ser. No. 282,322
Int. Cl.³ C08J 9/14
U.S. Cl. 521—114 **37 Claims**



1. A foam material comprising the reaction product of:
A. phenol aldehyde resin forming ingredients, and
B. a blowing agent, and
C. a surfactant which comprises the reaction product consisting of
(a) a polyoxyalkylene adduct having the formula

$$H\text{—polyoxyalkylene chain})_tR,$$

wherein R is an organic or inorganic radical and t is the number of polyoxyalkylene chains reacted onto R, and
(b) an esterified unsaturated dibasic acid having the formula

$$T^1O_2C\text{—}C_uH_{2u-2}\text{—}CO_2T^2$$

wherein u is 2 or 3 and T^1 and T^2 are identical or different and represent a straight or branched, saturated or unsaturated hydrocarbon chain, in the presence of an effective amount of a free-radical initiator, and wherein polyoxyalkylene adduct is treated either before or after its reaction with the esterified unsaturated dibasic acid with a capping agent capable of reacting with the hydroxyl groups of said adduct to reduce the hydroxyl number of said adduct to less than 50.

4,365,025

FLEXIBLE POLYURETHANE FOAMS FROM POLYMETHYLENE POLYPHENYL ISOCYANATE CONTAINING PREPOLYMERS

Robert M. Murch, Brinklow, and Louis L. Wood, Rockville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed December 8, 1981, Ser. No. 328,478
Int. Cl.³ C08G 18/14
U.S. Cl. 521—159 **25 Claims**

1. A flexible foam having low compression set values of about 25% or less and good hydrolytic stability made by mixing together and reacting an aqueous phase and
a resin phase comprising a prepolymer derived from
(a) a diphenylmethane diisocyanate-containing isocyanate product with a functionality of greater than 2.0 comprising a mixture of diphenylmethane diisocyanate and polymethylene polyphenyl isocyanate, and
(b) a polyol having at least about 50% by weight of oxyethylene groups and having nominally two to three hydroxyl equivalents per mole,
the ratio of the isocyanate equivalents to the total hydroxyl equivalents being in the range of 1.5:1 to 5:1.

4,365,026

(HALO)(HYDROXY)-SUBSTITUTED PHOSPHITES AND PHOSPHORATES AS FLAME RETARDANTS IN POLYURETHANE FOAMS

Chester E. Pawloski, Bay City, and Sally P. Ginter, Sanford, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed April 2, 1981, Ser. No. 250,449
Int. Cl.³ C08G 18/14, 18/32, 18/38; C07F 9/02
U.S. Cl. 521—168 **8 Claims**

1. A polyurethane compound comprising the reaction product of a diisocyanate compound and an effective amount for flame retardancy of a substituted phosphorus-containing compound having a viscosity at 25° C. as measured by a Brookfield viscosity meter of less than 500,000 centipoise selected from the group consisting of:

$$R_n\text{—}\overset{\overset{O}{\|}}{P}\text{—}(OCH_2CHXCH_2\text{—}R'_mOH)_{3-n},$$

$$R_n\text{—}P\text{—}(OCH_2CHXCH_2\text{—}R'_mOH)_{3-n}, \text{ and}$$

$$R_n\text{—}\overset{\overset{X}{|}}{\underset{\underset{X}{|}}{P}}\text{—}(OCH_2CHXCH_2\text{—}R'_mOH)_{3-n};$$

where
X is halo;
R is hydroxyl, halo or a moiety having up to 10 carbons selected from the group consisting of alkyl, aryl, haloalkyl, haloaryl, alkoxy and haloalkoxy;
R′ is a divalent moiety having up to 10 carbons selected from alkylene, arylene, alkyl- or aryl-substituted derivatives thereof, and —$(OCH_2CHR''\text{—})_x$, wherein R″ is hydrogen, methyl, ethyl or halomethyl, and x is 1, 2 or 3;
m is zero or 1; and
n is a number greater than or equal to zero and less than three that indicates the number of equivalents of specified moiety per mole of named compound.

4,365,027

REMOVAL OF ACRYLONITRILE FROM LATEX WITH OXIMES

Michael L. Senyek, Tallmadge, and Albert J. Costanza, Fairlawn, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed December 28, 1981, Ser. No. 334,770
Int. Cl.³ C08K 5/16
U.S. Cl. 523—332 **14 Claims**

1. An improved process for reducing the concentration of free acrylonitrile in an acrylonitrile polymer emulsion containing free acrylonitrile, comprising adding to said acrylonitrile polymer emulsion an oxime in amounts and under conditions sufficient to react with said free acrylonitrile to form a cyanoethyl oximino ether linkage.

4,365,028

COATING COMPOSITION

Gus W. Leep, Elgin, and Morris J. Root, Highland Park, both of Ill., assignors to Seymour of Sycamore, Inc., Sycamore, Ill.

Filed June 11, 1981, Ser. No. 272,784
Int. Cl.[3] C08L 23/00, 63/00, 67/02, 75/06
U.S. Cl. 523—402 13 Claims

1. An improved water-in-oil emulsion coating composition comprising: (a) a continuous phase, said continuous phase including an organic solvent, said solvent being of aliphatic or aromatic or combined aliphatic and aromatic hydrocarbon composition; (b) a dispersed phase, said dispersed phase including water; (c) a film-forming resin dissolvable in said solvent, said continuous phase further including an effective amount of said resin for forming a film on a workpiece; and, (d) an emulsifier, said coating composition including an effective amount of said emulsifier for maintaining stable dispersion of said dispersed phase throughout said continuous phase, said emulsifier having an HLB value of from 2 to about 6, whereupon said coating composition has as much as 80 percent water on a weight basis, said water thereby extending said solvent as to said coating composition, said water being substituted for said solvent throughout said coating composition.

4,365,029

COATING AND ADHESIVE COMPOSITION COMPRISING (A) PVC, (B) ACRYLATE POLYMER HAVING CARBOXYL CURE SITES AND (C) REINFORCING FILLER

Robert F. Reizer, Stanton; Albert H. Koivu, Huntington Beach, and Leslie J. Cohen, Los Angeles, all of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed 1981, Ser. No. 234,779
Int. Cl.[3] C08F 8/00; C08L 63/00, 33/02; C08K 3/04
U.S. Cl. 523—437 17 Claims

1. An abrasion resistant coating composition or adhesive which comprises an ethylene-acrylic elastomer having cure site carboxyl groups, a high molecular weight polyvinyl chloride and a reinforcing filler.

4,365,030

OVERTREATED HIGHER DIALKYL DIMETHYL AMMONIUM CLAY GELLANTS

Alexis A. Oswald, Mountainside, and Harry W. Barnum, Edison, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 712,667, Aug. 9, 1976, abandoned, which is a division of Ser. No. 509,809, Sep. 27, 1974, Pat. No. 3,974,125. This application March 23, 1977, Ser. No. 780,450
Claims priority, application Canada, August 20, 1975, 233773; United Kingdom, August 22, 1975, 34951/75; Italy, September 5, 1975, 26976 A/75; Fed. Rep. of Germany, September 18, 1975, 2541557; France, September 20, 1975, 75 29615
Int. Cl.[3] C08L 67/08, 67/06
U.S. Cl. 523—508 19 Claims

1. A process for preparing a quaternary higher dialkyl dimethyl ammonium clay composition of layer and chain type structure comprising reacting in a reaction media comprising a water miscible polar organic solvent and water having dispersed therein mineral clays of layer and chain type structure with a quaternary higher dialkyl dimethyl ammonium salt dissolved in said reaction media, wherein the concentration of ammonium ions of said ammonium salt ranges from about 12 to 25% above the ion exchange capacity of the clay as expressed in milliequivalents per 100 g. dry clay and as determined by the amount of ammonium acetate which reacts with the clay when an excess of ammonium acetate is used as a reactant.

4,365,031

COMPOSITION AND PROCESS FOR MAKING A GREEN COLORED POLYESTER

Fred L. Massey, Uniontown, and Douglas D. Callander, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 198,071, Oct. 27, 1980. This application March 4, 1981, Ser. No. 240,426
Int. Cl.[3] C08K 3/22; C08L 67/02
U.S. Cl. 524—88 35 Claims

1. In a polyester article the improvement comprising:
a small amount of various color-imparting compounds contained in the polyester for imparting a green color thereto,
said color-imparting compounds comprising a niobium catalyst compound, and a blue pigment,
the amount of said niobium catalyst compound utilized is such that the amount of elemental niobium in said niobium catalyst compound ranges from about 5 to about 150 parts by weight based upon one million parts by weight of said polyester, and the amount of said blue pigment ranges from about 20 parts to about 100 parts by weight based upon one million parts by weight of said polyester,
said amount of said compounds imparting a green color to said article.

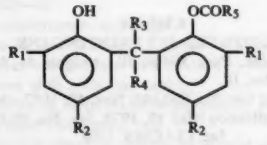
4,365,032

MONOESTER COMPOUND OF 2,2-ALKYLIDENE BIS(4,6-DI-SUBSTITUTED PHENOL)

Akihiko Yosizato; Yoshinori Morifuji; Kunio Kondo, all of Moriyama, and Masatsugu Yoshino, Numazu, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 100,457, Dec. 5, 1979, abandoned. This application November 4, 1981, Ser. No. 318,018
Claims priority, application Japan, December 6, 1978, 53-150063; October 25, 1979, 54-137051; November 28, 1979, 54-152872
Int. Cl.[3] C08K 5/34; C07D 5/13; C07C 67/14, 67/08, 69/92, 69/88, 69/78, 69/74, 69/28
U.S. Cl. 524—99 42 Claims

1. A compound of the formula,



(I)

wherein R_1 and R_2, which may be the same or different, each represents a C_{1-4} alkyl group, a C_{5-6} cycloalkyl group or a methyl-substituted C_{5-6} cycloalkyl group; and one of R_3 and R_4 represents a hydrogen atom and the other represents a hydrogen atom or a C_{1-10} alkyl group or both of them represent a methyl group; R_5 represents a C_{4-9} alkyl group, a C_{3-7} cycloalkyl group, a phenyl group, a C_{1-4} alkyl-substituted phenyl group, a C_{1-4} alkoxy-substituted phenyl group, a mono- or di-C_{1-4} alkyl-substituted hydroxyphenyl group, a benzyl group or a pyridyl group.

35. A polyurethane synthetic resin composition comprising 100 parts by weight of polyurethane synthetic resin and about 0.001 to about 10 parts by weight of the compound of the Formula (I) of claim 1.

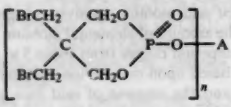
4,365,033

FLAME-RETARDANT POLYMER COMPOSITIONS CONTAINING METAL OR AMINE SALTS

Yuval Halpern, Skokie, and Donna M. Mott, Des Plaines, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed July 2, 1981, Ser. No. 279,634
Int. Cl.³ C08K 5/34, 5/52
U.S. Cl. 524—118 8 Claims

1. A composition comprising a normally flammable polymer and a minor porportion, sufficient to impart flame-retardant properties to said composition, of a salt of 5,5-bis (bromomethyl)-2-hydroxy-2-oxo-1,3,2-dioxaphosphorinane having the structure



where A is a polyvalent metal or protonated amino-s-triazine group and n is an integer corresponding to the valence of A.

4,365,034

ACETYLENE-TERMINATED POLYIMIDE COMPOSITIONS

Mark F. Grimes, Springfield, and Theodore J. Reinhart, Jr., Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed September 21, 1981, Ser. No. 304,126
Int. Cl.³ C08G 73/12
U.S. Cl. 524—256 3 Claims

1. A composition of matter comprising a major amount of an acetylene-terminated polyimide oligomer and a minor amount of a cure rate inhibitor selected from the group consisting of hydroquinone maleic acid, glutaric acid, dibetanaphthyl paraphenylene diamine.

4,365,035

PIGMENTED JET PRINTING INK

Daniel M. Zabiak, Park Ridge, Ill., assignor to A. B. Dick Company, Niles, Ill.

Continuation of Ser. No. 850,140, Nov. 10, 1977, abandoned. This application May 18, 1979, Ser. No. 40,117
Int. Cl.³ C08K 5/04
U.S. Cl. 524—283 24 Claims

1. A water base jet printing ink composition for printing on black, dark, or highly colored substrates, the essential components of the water based jet printing ink consisting essentially of

(1) a highly water dispersible white inorganic pigment having a particle size less than 5 microns,
(2) a water dispersible thermoplastic acrylic resin,
(3) a solvent selected from the group consisting of low boiling alcohol and water-alcohol mixture,
(4) a basic compound dissolved in the solvent for adjustment of the pH to within the range of 7.5–9.5,
(5) a plasticizer which imparts water resistance and abrasion resistance to the formed ink image, and
(6) water.

4,365,036

FAST CRYSTALLIZING POLYALKYLENETEREPHTHALATE RESIN COMPOSITIONS

Chung J. Lee, Sheboygan, Wis., assignor to Plastics Engineering Company, Sheboygan, Wis.

Filed December 15, 1981, Ser. No. 330,879
Int. Cl.³ C08K 5/12, 5/06, 11/00; C08L 67/02
U.S. Cl. 524—299 16 Claims

1. A fast crystallizing molding composition comprising essentially:

a. a polyalkyleneterephthalate in which the alkylene group has 2–4 carbon atoms;
b. a complex of NaI and a polymeric compound having at least two recurring units having the formula —CH_2C-H_2O—, the amount of said complex being enough to give a proportion of 0.025–2 percent by weight of NaI based on the weight of said polyalkyleneterephthalate.

4,365,037

GLASS FIBER-REINFORCED POLYARYLENE SULFIDE RESIN COMPOSITION

Tuneyuki Adachi, Nara, and Hiroshi Nakamura, Sakai, both of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan

Filed July 15, 1981, Ser. No. 283,373
Claims priority, application Japan, July 18, 1980, 55-98269; October 3, 1980, 55-137580
Int. Cl.³ C08L 81/00
U.S. Cl. 524—449 9 Claims

1. A glass fiber-reinforced polyarylene sulfide resin composition comprising 30 to 95 parts by weight of a polyarylene sulfide resin and 70 to 5 parts by weight of glass fibers having a diameter of from 5 to 11.5 microns, the total of the resin and glass fibers being 100 parts by weight, and as an optional component, mica powder.

4,365,038

COMPOSITION OF POLYPHENYLENE ETHER RESINS AND EPDM-POLYSTYRENES MODIFIED WITH SILICONE OIL

Glenn D. Cooper, and Arthur Katchman, both of Delmar, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed December 23, 1980, Ser. No. 220,167
Int. Cl.³ C08K 5/54
U.S. Cl. 260—29.1 SB 18 Claims

1. A thermoplastic molding composition which comprises:

(a) from about 20 to about 80% by weight of a polyphenylene ether resin;
(b) from about 80 to about 20% by weight of a polystyrene resin-modified with a rubbery interpolymer of a mixture of mono-olefins and a polyene by polymerizing a styrene monomer in the presence of the rubbery interpolymer, and
(c) a silicone oil, free from unsaturated hydrocarbon groups, in an amount effective to enhance the impact resistance of the composition, at both room temperature and low temperature, and also its surface appearance, wherein said silicone oil is added to a solution of the rubbery interpolymer in the styrene monomer before polymerization of the styrene.

4,365,039

VAPOR PERMEATION CURABLE POLYESTER RESIN COATING COMPOSITIONS FOR FLEXIBLE SUBSTRATES

James R. Biegen, Worthington, Ohio, assignor to Ashland Oil, Inc., Dublin, Ohio

Division of Ser. No. 216,323, Dec. 15, 1980, Pat. No. 4,343,839. This application April 5, 1982, Ser. No. 365,602
Int. Cl.³ C08G 18/42; B05D 3/10; C08G 18/82
U.S. Cl. 524—773 20 Claims

1. A coating composition rapidly curable at room temperature in the presence of a vaporous tertiary amine catalyst and

possessing a pot life of at least about 4 hours in an open pot, a cured film thereof at a thickness of between about 0.1 and 0.5 mils possessing a flexibility sufficient for a zero T-bend on metal, and a mar resistance of at least about 2,000 grams as borne by the edge of a nickel passed over said cured film, comprising:

(A) an aromatic hydroxyl-functional condensation product having an acid number of less than about 10 and made by condensing the following ingredients in the indicated molar proportions or double thereof except for the phenolic-functional carboxylic acid:
  (1) between about 1 and 2 moles of a C_2–C_{12} linear aliphatic dibasic acid,
  (2) between about 1 and 2 moles of an ortho or meta aromatic dicarboxylic acid or anhydride thereof,
  (3) between about 1 and 4 moles of a C_2–C_6 alkylene glycol,
  (4) between about 1 and 2 moles of a sterically hindered diol,
  (5) between about 1 and 2 moles of a mono-epoxide or diol having a pendant C_8–C_{22} hydrocarbyl group, and
  (6) between about 1 and 2 moles of a phenolic-functional carboxylic acid;

(B) a multi-isocyanate comprising:
  (1) between about 10 and 80 percent by weight of an aromatic multi-isocyanate, and
  (2) between about 90 and 20 percent by weight of an aliphatic multi-isocyanate;

(C) a volatile organic solvent for said condensation product and for said multi-isocyanate, and

(D) a mar-resisting agent of an organic compound physically incompatible in said coating composition and having an effective chain length of at least about 12 carbon atoms;

the ratio of aromatic hydroxyl equivalents of said condensation product to the isocyanate equivalents of said multi-isocyanate being between about 1:1 and 1:1.7, said condensation product containing substantially no aliphatic hydroxyl groups, and said condensation product having a phenol functionality of at least 2.

4,365,040

AQUEOUS PLASTIC DISPERSIONS OF UNSATURATED DIACETYLACETIC ESTER

Herbert Eck, and Robert Singer, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

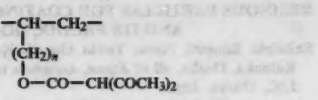
Filed October 1, 1980, Ser. No. 192,732

Claims priority, application Fed. Rep. of Germany, November 27, 1979, 2947768

Int. Cl.³ C08F *220/26, 220/10*

U.S. Cl. 524—819 **6 Claims**

1. A strongly adherent aqueous plastic dispersion consisting essentially of from 20% to 70% by weight of copolymers of at least two olefinically unsaturated compounds selected from the group consisting of:
  (1) vinyl esters of alkanoic acids having from 1 to 20 carbon atoms,
  (2) (meth)acrylic acid esters with alkanols having from 1 to 20 carbon atoms,
  (3) α,β-alkenes having 2 to 6 carbon atoms,
  (4) α,β-alkenyl-aromatic hydrocarbons having 8 to 14 carbon atoms,
  (5) maleic and fumaric acid diesters with alkanols having from 1 to 20 carbon atoms,
  (6) α,β-unsaturated alkenoic acids having from 3 to 7 carbon atoms,
  (7) amides of said alkenoic acids,
  (8) nitriles of said alkenoic acids, and
  (9) vinyl halides, said copolymers containing from 0.2% to 7% by weight of diacetylacetic acid ester units having the formula:



wherein n is the integer 0 or 1, and from 0 to 5% by weight of polyfunctional monomers capable of cross-linking copolymers, in an aqueous dispersion.

4,365,041

RESIN COMPOSITION COMPRISING WATER-SOLUBLE POLYAMIDE AND VINYL ALCOHOL-BASED POLYMER

Takashi Okamoto, Osaka, and Osamu Doi, Jyoyo, both of Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed April 27, 1981, Ser. No. 258,217

Claims priority, application Japan, April 26, 1980, 55-55944; May 22, 1980, 55-68649

Int. Cl.³ C08L *77/00*

U.S. Cl. 525—58 **21 Claims**

1. A resin composition consisting essentially of a water-soluble polyamide and a vinyl alcohol-based polymer in a ratio of from about 0.5/100 to 100/0.5, wherein the water-soluble polyamide contains a sulfonic acid group, a salt of a sulfonic acid group or an ammonium salt type of nitrogen atom and further wherein the linking groups of the water-soluble polyamide are substantially essentially amido bonds.

4,365,042

COMPOSITIONS OF POLYPHENYLENE OXIDES WITH EPDM-SILICONE RUBBER

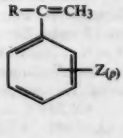
Glenn D. Cooper, and Arthur Katchman, both of Delmar, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed December 23, 1980, Ser. No. 220,166

Int. Cl.³ C08L *83/10*

U.S. Cl. 525—68 **13 Claims**

1. A composition comprising:
(a) from about 1 to about 15 percent of a graft copolymer of a rubber interpolymer of a mixture of mono-olefins and a polyene with a silicone rubber;
(b) from about 30 to about 99 percent by weight of a polyphenylene oxide resin; and
(c) from 0 to about 70 percent by weight of a styrene resin having at least 25% polymer units derived from the compound having the formula:



wherein
R is hydrogen, (lower) alkyl or halogen,
Z is hydrogen, halogen, (lower) alkyl or vinyl, and
p is a whole integer from 1 to 5.

4,365,043

RESINOUS PARTICLES FOR COATING COMPOSITION AND ITS PRODUCTION

Sakuichi Konishi, Nara; Yukio Omori, Kobe, and Hiroyoshi Kataoka, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed March 14, 1977, Ser. No. 777,548
Claims priority, application Japan, March 12, 1976, 51-27935; March 12, 1976, 51-27936
Int. Cl.[3] C08L *33/08, 61/28, 63/00, 67/00*
U.S. Cl. 525—113 12 Claims

1. A process for preparing resinous particles for a coating composition which comprises the steps of

(1) treating

(A) an aqueous resin dispersion or solution, which comprises

(a) a resin having carboxyl groups or primary, secondary or tertiary amino groups and no material dispersibility or solubility in water, which resin has been rendered dispersible or soluble in water by at least partly neutralizing the carboxyl groups or the amino groups with a base or an acid, respectively, and

(b) a water-insoluble crosslinking agent which is crosslinkable with functional groups in the resin,

with

(B) an acidic substance or a basic substance as a powdering agent, said acidic substance being used when the resin is one having carboxyl groups, said basic substance being used when the resin is one having primary, secondary or tertiary amino groups,

under conditions which will deposit the resin in particulate form together with the crosslinking agent uniformly dispersed therein, and

(2) recovering the deposited resinous particles containing the crosslinking agent from the aqueous medium.

4,365,044

POLYPROPYLENE COMPOSITION FOR EXTRUSION COATING

Chia-Seng Liu, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 264,160, May 12, 1981, abandoned. This application July 30, 1981, Ser. No. 288,568
Int. Cl.[3] C08L *23/06, 23/12, 25/16*
U.S. Cl. 525—240 2 Claims

1. A propylene polymer composition having improved extrudability, comprising (a) a crystalline polypropylene having a melt flow rate at 230° C. of at least 3, (b) low density polyethylene having a density of 0.915 to 0.920, a melt index of 3 to 15 and a G_c value of at least 2.5×10^5, and (c) a copolymer of vinyl toluene and alpha-methyl styrene, which has been hydrogenated to the point where at least 50% of its aromatic unsaturation has been reduced, and which has a drop softening point from about 100° to 160° C., component (b) being from 3 to 15 parts by weight per 100 parts of (a), component (c) being from 2 to 10 parts by weight per hundred parts of (a), and the total of (b) and (c) being 7 to 20 parts per hundred parts of (a).

4,365,045

CRYSTALLINE OLEFIN BLOCK POLYMERS

Abraham Schneider, Overbrook Hills; Habet M. Khelghatian, Springfield, both of Pa.; Louise D. Hague, Wilmington, Del., and James L. Jezl, Swarthmore, Pa., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 90,173, Feb. 20, 1961, abandoned, which is a continuation-in-part of Ser. No. 816,714, May 29, 1959, abandoned. This application 1965, Ser. No. 424,819
Int. Cl.[3] C08F *297/08*
U.S. Cl. 525—247 10 Claims

1. A process for producing a block polymer which comprises contacting, under polymerizing conditions, propylene with a catalyst comprising a dispersion of solid particles of a metal subhalide wherein said metal is selected from the group consisting of the metals of Groups IVa, Va and VIa of the Periodic Table according to Mendeleeff and an activator therefor selected from the group consisting of metal alkyls, metal hydrides, metal borohydrides, aryl metal halides, and alkyl metal halides wherein said metal is selected from the group consisting of aluminum, zinc, beryllium, chromium, magnesium, lithium, sodium, potassium, and lead, in an inert hydrocarbon liquid reaction medium, whereby said propylene is polymerized to form a polymeric block, then contacting a second monomeric composition selected from the group consisting of ethylene and mixtures thereof with propylene, with said catalyst system under polymerizing conditions whereby said second monomeric composition polymerizes in the presence of the previously formed polymeric block as a linear extension thereto, the polymerization of propylene being performed in the presence of sufficient hydrogen to give a melt index suitable for melt processing of the resulting block polymer and the polymerization of said second monomeric composition being performed in the substantial absence of added hydrogen, terminating the polymerization reaction and separating from the reaction mixture a solid, substantially crystalline block polymer which is predominantly insoluble in said reaction mixture at polymerization temperature and comprises molecules consisting essentially of a single homopolymer block linearly connected to a single polymer block selected from the group consisting of an interpolymer block and a homopolymer block derived from a monomer different from that of the first-mentioned homopolymer block, said block polymer consisting essentially of 99.8 to 40 weight percent of propylene and 0.2 to 60 weight percent of ethylene.

4,365,046

PROCESS TO CONTROL THE CURING REACTION BETWEEN A COPOLYESTER RESIN AND AN EPOXIDE COMPOUND, AND A COMPOSITION FORMED FOR THAT PROCESS

Patrick J. Pesata, Jr., Medina; Harlan W. Frerking, Jr., Alliance, and Nelson C. Bletso, Kent, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed 1981, Ser. No. 223,973
Int. Cl.[3] C08L *63/00, 67/02*
U.S. Cl. 525—438 29 Claims

1. A process to control the activation energy of the curing reaction between a copolyester resin and an epoxide compound, comprising:

mixing with copolyester resin, from about 0.01 to about 10 weight percent per copolyester resin weight of an aromatic acid having at least 1 carboxylic acid group and having from 7 to 20 carbon atoms, such that the copolyester resin reaction with the epoxide compound requires a higher activation energy to induce curing of the copolyester resin after compounding with said epoxide compound and during heating of the copolyester resin-epoxide compound mixture;

wherein said polymerization of the copolyester resin comprises an esterification stage, a condensation stage, a reactor compounding stage and a finishing stage; and

wherein said mixing occurs during said reactor compounding stage or said finishing stage.

4,365,047

RESIN COMPOSITION FOR BONDING FOUNDRY SAND

Koue Ohkawa, Yokohama; Shin Fujii, Zama, and Takashi Seino, Yokosuka, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed May 30, 1980, Ser. No. 154,908
Claims priority, application Japan, June 7, 1979, 54-70620
Int. Cl.[3] C08L *67/06*
U.S. Cl. 525—447 7 Claims

1. A resin composition for binding foundry sand, said composition comprising

(A) 100 parts by weight of a binder comprising a normally solid, substantially tack-free, crystalline unsaturated polyester, and

(B) 0.1 to 10 parts by weight of a mixture of at least two of three types of radical polymerization catalysts, the first type being a radical polymerization catalyst which requires a temperature of at least 70° C. but below 90° C. to obtain a half-period value of 10 hours, the second type being a radical polymerization catalyst which requires a temperature of at least 90° C. but below 110° C. to obtain a half-period value of 10 hours and the third type being a radical polymerization catalyst which requires a temperature of at least 110° C. but not exceeding 130° C. to obtain a half-period value of 10 hours.

4,365,048

METHOD FOR POLYMERIZING α-OLEFIN

Haruo Ueno, Chiba; Takefumi Yano, Ichihara; Tokuji Inoue, Ichihara; Shigeru Ikai, Ichihara; Yoshiyuki Kai, Ichihara, and Michimasa Shimizu, Ichihara, all of Japan, assignors to UBE Industries, Ltd., Chiba, Japan

Filed May 14, 1981, Ser. No. 263,573

Claims priority, application Japan, May 22, 1980, 55-67159

The portion of the term of this patent subsequent to October 27, 1998, has been disclaimed.

Int. Cl.[3] C08F *4/02, 10/06*

U.S. Cl. 526—128 24 Claims

1. A method for polymerizing an α-olefin which comprises bringing, in the presence of an organic acid ester, a feed containing at least one α-olefin having 3 or more carbon atoms into contact with a catalyst comprising (A) a solid catalytic ingredient which has been prepared in such a manner that (a) a Grignard compound of the formula (I):

$$R^3M_gX \quad (I)$$

wherein R^3 represents an alkyl radical having 1 to 8 carbon atoms and X represents a halogen atom, is reacted with a reaction product of an aluminium halide with an organic silicon compound of the formula (II):

$$R_n{}^1Si(OR^2)_{4-n} \quad (II)$$

wherein R^1 represents a member selected from the group consisting of alkyl radicals having 1 to 8 carbon atoms and a phenyl radical, R^2 represents an alkyl radical having 1 to 8 carbon atoms and n represents an integer of 1, 2 or 3, (b) the resultant solid reaction product is brought into a first contact with a titanium tetrahalide, (c) the resultant titanium-containing solid product is treated with an organic acid ester and, finally, (d) the treated solid product is brought into a second contact with a titanium tetrahalide; and (B) another catalytic ingredient consisting of at least one trialkyl aluminium of the formula (III):

$$AlR_3{}^4 \quad (III)$$

wherein R^4 represents alkyl radical having 2 to 6 carbon atoms.

4,365,049

FLUOROALKYL ACRYLATE COPOLYMER AND COMPOSITION CONTAINING THE SAME

Takahiro Tsunoda; Tsuguo Yamaoka, both of Funabashi, and Sinji Tamaru, Suita, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

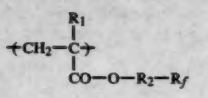
Filed March 23, 1981, Ser. No. 246,156

Claims priority, application Japan, March 31, 1980, 55-42704

Int. Cl.[3] C08F *20/22*

U.S. Cl. 526—245 3 Claims

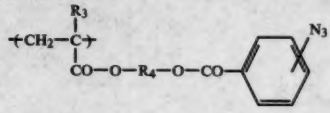
1. A fluoroalkyl acrylate copolymer comprising at least 10% by mole of recurring units of the general formula (I):



(I)

wherein R_1 is hydrogen atom or methyl group, R_2 is a bivalent hydrocarbon group having 1 to 5 carbon atoms, and R_f is a C_2 to C_6 straight or branched perfluoroalkyl group or a C_2 to C_6 straight or branched fluoroalkyl group having hydrogen atoms of not less than one and of not more than half of the number of the carbon atoms,

and at least 5% by mole of recurring units of the general formula (II):



(II)

wherein R_3 is hydrogen atom or methyl group, and R_4 is a bivalent hydrocarbon group or a mono-substituted bivalent hydrocarbon group with hydroxyl group or a halogen except fluorine having 1 to 5 carbon atoms.

4,365,050

AMINO-POLYSACCHARIDES AND COPOLYMERS THEREOF FOR CONTACT LENSES AND OPHTHALMIC COMPOSITIONS

Edward J. Ivani, 2360 E. 74 St., Brooklyn, N.Y. 11234

Filed July 15, 1981, Ser. No. 283,613

Int. Cl.[3] C08L *5/08, 89/00*

U.S. Cl. 527—312 7 Claims

1. A polymeric composition formed from D-glucosamine or derivatives thereof selected from the group consisting of N-acetyl-D-glucosamine, substituted N-acetyl-D-glucosamine, derivatives of N-acetyl-D-glucosamine and graft and block polymers of N-acetyl-D-glucosamine, and a compound selected from the group consisting of a silicone, collagen, acrylonitrile, acrylamide, methacrylate acids and esters, alkylaminoalkyl methacrylate and hydroxyalkyl methacrylate and pyrrolidone and derivatives of pyrrolidone.

4,365,051

POLYURETHANE PREPARED FROM DIAMINE AND PREPOLYMER

Daniel A. Chung, North Canton, and John P. Lawrence, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

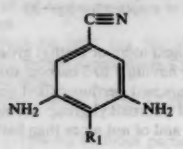
Continuation of Ser. No. 124,162, Feb. 25, 1980, abandoned, which is a division of Ser. No. 13,697, Feb. 21, 1979, Pat. No. 4,254,272. This application April 3, 1981, Ser. No. 250,976

Int. Cl.[3] C08G *18/32*

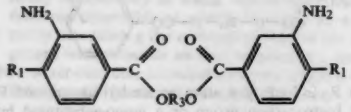
U.S. Cl. 528—64 4 Claims

1. A polyurethane prepared by reacting at least one substituted aromatic diamine with an isocyanate terminated prepolymer prepared by reacting a polyisocyanate having an isocyanato functionality of 2 to 3, with a polyol comprised of about 80 to about 100 weight percent polymeric polyols selected from polyester polyols, polyether polyols and hydroxyl terminated unsaturated polymeric polyols and correspondingly, about 20 to about 0 weight percent monomeric hydrocarbon diols having 3 to 8 carbon atoms, where the ratio of isocyanato groups to hydroxyl groups of the polyol, or polyol mixture, is in the range of about 1.3/1 to about 5/1, and where the ratio of amino groups of said diamine to excess isocyanato groups of said hydroxyl groups is in the range of about 0.5/1 to about 1.1/1; characterized in that said substituted aromatic diamine is selected from at least one of the groups consisting of

(I) cyclohexyl-3,5-diamino-4-tert-butylbenzoate and/or phenyl-3,5-diamino-4-tert-butylbenzoate;
(II) a 3,5-diamino-4-tert.-alkylbenzonitrile of the formula



wherein R_1 is selected from butyl, tertiary amyl and tertiary hexyl radicals; and
(III) an alkylene bis(3-amino-4-tert.-alkylbenzoate) of the following formula:



wherein R_1 is selected from tertiary butyl, tertiary amyl and tertiary hexyl radicals and R_3 is selected from straight chain saturated alkylene radicals containing 2–10 carbon atoms.

4,365,052

METHOD FOR THE PREPARATION OF TRANSPARENT CASTING RESINS

Ulrike Reeh, Munich, and Hans Denk, Gauting, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed April 16, 1981, Ser. No. 254,607
Claims priority, application Fed. Rep. of Germany, April 25, 1980, 3016103
Int. Cl.³ C08G *59/68*
U.S. Cl. 528—92 **5 Claims**

1. A method for the manufacture of transparent casting resins prepared from aromatic diglycidyl ethers, carboxylic acid anhydrides, metal salts of carboxylic acids and auxiliary agents and additives, comprising forming an admixture of (a) a premixture comprising zinc octoate and a low-molecular weight acid ester, which premixture is liquid at room temperature, and (b) a liquid acid anhydride, and adding said admixture to a liquid aromatic diglycidyl ether.

4,365,053

ALKYLATED ISOADIPOGUANAMINE-FORMALDEHYDE CROSSLINKING RESIN AND IMPROVED COATING COMPOSITIONS PRODUCED THEREFROM

Francis E. Schweitzer, Philadelphia, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed August 8, 1980, Ser. No. 176,551
Int. Cl.³ C08G *12/30*
U.S. Cl. 528—258 **6 Claims**

1. A thermosetting crosslinking resin mixture for use with film-forming material selected from the group consisting of acrylic resins, polyester or alkyd resins, and epoxy resins, or mixtures of these, said resin mixture consisting essentially of the reaction product of:
(1) an isoadipoguanamine mixture consisting essentially of:
(a) about 87–95 percent by weight, based on the weight of the isoadipoguanamine mixture, of 2-methylglutaroguanamine,
(b) about 4–12 percent by weight, based on the weight of the isoadipoguanamine mixture, of 2-ethylsuccinoguanamine, and
(c) about 1–2 percent by weight, based on the weight of the isoadipoguanamine mixture, of adipoguanamine;
(2) from 3–6 moles of formaldehyde per mole of said isoadipoguanamine mixture; and
(3) a stoichiometric excess of an aliphatic alcohol having 1–4 carbon atoms or of a mixture of such alcohols.

4,365,054

ETHYLENE GLYCOL TEREPHTHALATE PRODUCTION

Bernard D. Stabley, Jr., Chester, Va., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed August 11, 1975, Ser. No. 603,479
Int. Cl.³ C08G *63/04, 63/14, 63/34*
U.S. Cl. 528—277 **9 Claims**

1. The method of producing an ester of ethylene glycol and terephthalic acid which comprises catalyzing the esterification of 1.2 to 2 mols of ethylene glycol with 1 mol of terephthalic acid under conditions ranging between 225° to 250° C. and a pressure of 10 to 40 psig, using as a catalyst 0.005 to 0.030 part of $M_2O(TiO_2)_n$ per hundred parts of the reactants, in which M is from the class consisting of lithium, potassium, sodium, rubidium and caesium, and n is 0.05 to 25.

4,365,055

PROCESS FOR PRODUCING SUBSTANTIALLY LINEAR CARBONATE POLYMER

Darold L. Madigan, Elk Grove Village, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 24, 1981, Ser. No. 276,753
Int. Cl.³ C08G *63/62*
U.S. Cl. 528—371 **22 Claims**

1. A process for producing substantially linear carbonate polymer comprising:
a. introducing carbonic dihalide to substantially anhydrous solution comprising inert organic solvent, at least one substituted or unsubstituted 1,3-propanediol and a catalytic amount of nitrogen-containing, hydrohalide salt-forming, thermally regenerable organic catalyst, while the temperature of said solution is in the range of from about 70° C. to about 225° C.; and
b. removing hydrogen halide from the vicinity of said solution.

4,365,056

PROCESS FOR PRODUCING 2-(C_1 TO C_3 ALKYL)-Δ^2-OXAZOLINE COPOLYMERS

Paul Sunder-Plassmann, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed September 11, 1981, Ser. No. 301,269
Claims priority, application Fed. Rep. of Germany, September 25, 1980, 3036119
Int. Cl.³ C08G *73/00*
U.S. Cl. 528—403 **9 Claims**

1. In a process for preparing a linear or slightly branched 2-(C_1 to C_3 alkyl)-Δ^2-oxazoline copolymer from a mixture of monomers more than 50 mole % of which is 2-(isopropyl- and/or n-propyl)-Δ^2-oxazoline and less than 50 mole % of which is 2-(methyl- and/or ethyl)-Δ^2-oxazoline, the copolymer having a viscosity number of 35 to 70 ml/g which is easily reproducible from batch to batch,
comprising polymerizing the monomers in the presence of a cation-active catalyst whose anion is slightly nucleophilic,
the improvement wherein,
(A) the monomers used as reagents contain less than 200 mg of water per liter of reagent and less than 0.003% by weight of basic nitrogen, the monomers being obtained by the following purification steps:
(i) fractional distillation thereof, optionally carried out after preaddition to the monomer reagent of an inert, organic solvent which acts as an entraining agent for impurities and which has a boiling point at least 15° C. lower at normal pressure than the monomer reagent, and optionally carried

out at reduced pressure, which method can be applied to all monomers, or

addition thereto of an inert, organic solvent which acts as an entraining agent for impurities and which has a boiling point at least 15° C. lower at normal pressure than the monomer reagent; followed by distillation to extensively remove this solvent; subsequently followed by addition to the resultant sump product of from 0.01 to 2 parts by weight, referred to 100 parts by volume of the monomer reagent, of an aromatic isocyanate boiling at above 100° C./7 mbar; and ensuing fractional distillation at reduced pressure, which method can only be applied to 2-isopropyl-Δ^2-oxazoline monomer reagent;

(ii) subsequent contact with silica gel or neutral aluminum oxide, and

(iii) optional drying above a molecular sieve having a pore width of 0.3 to 0.4 nm;

(B) the polymerization is discontinuous and is carried out in a stirring vessel provided with a reflux condenser adequately dimensioned to remove the heat of polymerization by evaporative cooling;

(C) the polymerization temperature is from 120 to 175° C., and the temperature following the conversion of 90 mole-% of the monomers does not exceed 165° C., and

(D) the polymerization is stopped after a conversion of 96 to 99.5 mole-% of monomers has been reached.

4,365,057

METHOD FOR DRYING POLYOLEFINS

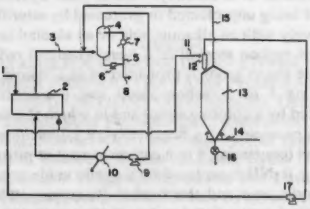
Shinichi Saito; Kazuo Aikawa; Michio Orino; Kazuya Aoi, and Hideo Kusakabe, all of Ichihara, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed March 27, 1979, Ser. No. 24,268

Claims priority, application Japan, June 29, 1978, 53-79382

Int. Cl.³ C08F *6/10*

U.S. Cl. 528—503 2 Claims



1. A method for drying a poly(α-olefin), which comprises supplying nitrogen gas having a dew point of −10° C. or lower into a silo type through-flow drying apparatus from the lower part thereof and contacting a poly(α-olefin) having a content of hydrocarbon medium of 0.2 to 2% by weight with said nitrogen gas in counterflow in said drying apparatus, the amount of nitrogen gas supplied being 20 to 40 Nm^3 per 1 ton of the poly(α-olefin), said drying in the silo type through-flow drying apparatus being carried out at a temperature of 70° to 130° C. and a retention time of the poly(α-olefin) of 0.5 to 20 hours.

4,365,058

METHOD OF PREPARATION OF ESTERS OF ANTIBIOTICS SELECTED FROM THE GROUP CONSISTING OF POLYENE MACROLIDES AND OF N-SUBSTITUTED DERIVATIVES THEREOF

Leonard S. Falkowski, Gdansk; Barbara J. Stefanska; Elzbieta Troka, both of Gdansk-Oliwa; Jerzy J. Golik, Sopot, and Edward Borowski, Gdansk-Wrzeszcz, all of Poland, assignors to Politechnika Gdanska, Gdansk, Poland

Filed July 7, 1980, Ser. No. 166,598

Claims priority, application Poland, July 18, 1979, 217239

Int. Cl.³ C07H *17/08*

U.S. Cl. 536—6.5 3 Claims

1. A method of esterifying polyene microlide antibiotics having a carboxyl group and selected from the group consisting of nystatin, aureofacin, candicidin, pimaricin, amphotericin B and polyfungin and the N-substituted acetyl and N-penten-2-on-3-yl-2 derivatives of these antibiotics, which comprises the steps of reacting said antibiotic compound with an alcohol selected from the group consisting of one to five carbon aliphatic alcohols and monocyclic aryl alcohols; in at least one neutral organic solvent therefor; in the presence of a reaction promotor selected from the group consisting of dicyclohexyl carbodiimide and mixtures of dicyclohexyl carbodiimide with hydroxybenzatriazole; at temperatures up to 40° C. until completion, isolating said ester and then purifying same.

4,365,059

NITRATION OF CELLULOSE

Robert P. Baumann, Mine Hill; Marcel Blais, Newton, and Irwin Spiess, Pequannock, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed August 3, 1981, Ser. No. 289,438

Int. Cl.³ C08B *5/02*

U.S. Cl. 536—35 7 Claims

1. A process for the production of nitrocellulose by the reaction of nitric acid and cellulose which comprises introducing into the reaction mixture containing concentrated nitric acid and cellulose, a mixture of nitric oxide and an oxygen containing gas to react with the water formed in the nitration reaction.

4,365,060

ENTEROSOLUBLE CAPSULES

Yoshiro Onda; Hiroaki Muto, and Kazumasa Maruyama, all of Joetsu, Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Filed April 15, 1980, Ser. No. 140,478

Claims priority, application Japan, April 28, 1979, 54-52914; August 27, 1979, 54-108888

The portion of the term of this patent subsequent to October 7, 1997, has been disclaimed.

Int. Cl.³ C08B *3/16, 13/00*

U.S. Cl. 536—65 3 Claims

1. An enterosoluble capsule for containing a medicament shaped with a mixed ester of a cellulose ether substituted with substituent groups selected from the class containing of alkyl groups and hydroxyalkyl groups esterified with acidic succinyl groups and aliphatic monovalent acyl groups wherein the average numbers of substitution of the acidic succinyl groups and the aliphatic monovalent acyl groups bonded to the cellulose ether are at least 0.1 and 0.05, respectively, per glucose unit.

4,365,061

INCLUSION COMPLEXES OF CYCLODEXTRINS AND STRONG INORGANIC OXY-ACIDS AND PROCESS FOR THEIR PREPARATION

Jozsef Szejtli; Zsuzsanna Budai; Gabriella Pap nee Imrenyi, and Andras Kerekes, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Filed October 16, 1981, Ser. No. 312,115
Claims priority, application Hungary, October 17, 1980, 2522
Int. Cl.³ C08G *59/00*
U.S. Cl. 536—103 **13 Claims**

1. An inclusion complex of a cyclodextrin and a strong inorganic oxy-acid.

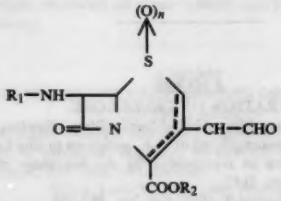
4,365,062

CEPHALOSPORIN DERIVATIVES

Daniel Farge, Thiais; Claude Moutonnier, Le Plessis Robinson; Pierre Le Roy, Thiais, and Jean-Francois Peyronel, Palaiseau, all of France, assignors to Rhone-Poulenc Industries, France

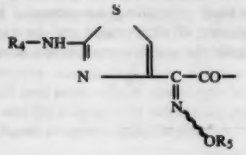
Filed May 21, 1980, Ser. No. 152,153
Claims priority, application France, May 23, 1979, 79 13097
Int. Cl.³ C07D *501/24*
U.S. Cl. 544—22 **10 Claims**

1. A cephalosporin derivative of the formula



in which n is 0 or 1,

(a) the symbol R_1 represents a radical of the formula



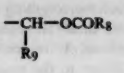
in the syn or anti form [in which R_4 is an amino protecting radical and R_5 is a hydrogen atom, an alkyl, vinyl or cyanomethyl radical or an oxime protecting group], a benzhydryl or trityl radical, an acyl radical of the formula

$R_6CO—$

in which R_6 is a hydrogen atom or an alkyl radical [said alkyl being unsubstituted or substituted by one or more halogen atoms or by a phenyl or phenoxy radical] or phenyl, a radical of the formula

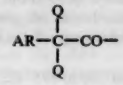
$R_7OCO—$

{in which R_7 is a branched unsubstituted alkyl radical or a straight or branched alkyl radical carrying one or more substituents [chosen from halogen atoms and cyano, trialkylsilyl, phenyl and substituted phenyl (the substituents being one or more alkoxy, nitro or phenyl radicals)], vinyl, allyl or quinolyl}, or a nitrophenylthio radical or $R_1NH=$ is replaced by a methyleneimino radical, in dialkylamino or phenyl group (said phenyl being unsubstituted or substituted by one or more methoxy or nitro radicals) and the symbol R_2 represents an enzymatically easily removable radical of the formula



[in which R_8 represents an alkyl radical or the cyclohexyl radical and R_9 represents a hydrogen atom or an alkyl radical] or a carboxyl protecting radical chosen from methoxymethyl, tert.-butyl, benzhydryl, p-nitrobenzyl or p-methoxybenzyl, or

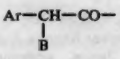
(b) the symbol R_1 represents an alkanoyl radical containing 1 to 8 carbon atoms, a substituted alkanoyl radical containing 2 to 8 carbon atoms (the substituents being chlorine or bromine atoms), an acyl radical of the formula



in which each Q is H or methyl and Ar represents a thien-2-yl, thien-3-yl, fur-2-yl, fur-3-yl, pyrrol-2-yl, or pyrrol-3-yl radical or a phenyl radical [said phenyl being unsubstituted or substituted by halogen atoms or by hydroxyl, alkyl (containing 1 to 3 carbon atoms) or alkoxy (containing 1 to 3 carbon atoms) radicals, of which at least one is situated in the meta- or in the para-position of the phenyl radical], an acyl radical of the formula

$Ar—X—CH_2—CO—$

in which X is oxygen or sulphur and Ar is as hereinbefore defined, or Ar-X- represents pyrid-4-ylthio, an acyl radical of the formula



in which Ar is as hereinbefore defined and B represents an amino radical which is protected [by a benzyloxycarbonyl, alkoxycarbonyl, cyclopentyloxy-carbonyl, cyclohexyloxycarbonyl, benzhydryloxycarbonyl, trityl or 2,2,2-trichloroethoxycarbonyl group], a sulpho radical, a hydroxyl radical or a carboxyl radical [said hydroxyl and carbonyl being unprotected or protected by esterification, respectively with an alkanoic acid or an alcohol (containing 1 to 6 carbon atoms)] or a 5-amino-adipyl radical [in which the amino group is protected by an alkanoyl radical (containing 1 to 3 carbon atoms and unsubstituted or substituted by a chlorine atom) and in which the carboxyl group is protected by a benzhydryl, 2,2,2-trichloroethyl, tert.-alkyl (containing 4 to 6 carbon atoms) or nitrobenzyl group] or R_1NH is replaced by a cyclic imide group of a dicarboxylic acid and the symbol R_2 represents a tert.-alkyl radical containing 4 to 6 carbon atoms, a tert.-alkenyl radical containing 6 or 7 carbon atoms, a tert.-alkynyl radical containing 6 or 7 carbon atoms, benzyl, methoxybenzyl, nitrobenzyl, 2,2,2-trichloroethyl benzhydryl, succinimidomethyl or phthalimidomethyl, the alkyl or acyl portions or radicals which have been referred to above being (unless stated to the contrary) straight or branched and containing 1 to 4 carbon atoms, and the product being in the 3-oxoethyl-bicyclooct-2-ene or 3-oxoethylbicyclooct-3-ene or 3-oxoethylidene-bicyclooctane form if n=0 and in the 3-oxoethyl-bicyclooct-2-ene or 3-oxoethylidene-bicyclooctane form if n=1, and the mixtures of their isomers.

4,365,063

ANTIHYPERTENSIVE AGENTS

Theodore S. Sulkowski, Wayne; James L. Bergey, Lansdale, and Albert A. Mascitti, Norristown, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

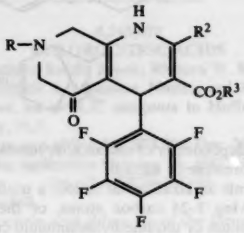
Filed August 31, 1981, Ser. No. 297,645

The portion of the term of this patent subsequent to March 23, 1999, has been disclaimed.

Int. Cl.³ C07D *471/02*

U.S. Cl. 546—123 4 Claims

1. A compound of the formula:



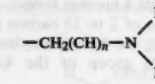
in which

R is hydrogen, alkyl of 1 to 6 carbon atoms or benzyl;

R^2 is alkyl of 1 to 6 carbon atoms;

and

R^3 is alkyl of 1 to 6 carbon atoms, alkoxyalkyl in which each alkyl moiety has 1 to 6 carbon atoms, $—CH_2CF_3$, $—CH_2CH_2CF_3$ or



where R^4 is hydrogen or alkyl of 1 to 6 carbon atoms and R^5 is alkyl of 1 to 6 carbon atoms or arylalkyl of 7 to 10 carbon atoms and R^4 and R^5 taken with the nitrogen atom to which they are attached form a pyrrolidinyl, imidazolidinyl, piperidinyl, piperazinyl, 4-alkylpiperazinyl in which the alkyl group contains from 1 to 6 carbon atoms or morpholinyl heterocycle,

and n is one of the integers 0, 1 or 2;

or a pharmaceutically acceptable salt thereof.

4,365,064

1,2,4-OXADIAZOLIN-5-ONE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Kalman Takacs; Ilona Kiss nee Ajzert; Antal Simay; Peter Literati Nagy; Maria Hetyey nee Papp; Marian Ecsery nee Puskas, all of Budapest; Laszlo Szekeres; Gyula Papp, both of Szeged; Sandor Viragh, Budapest, and Eva Udvardy, Szeged, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt, Budapest, Hungary

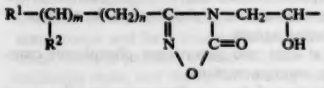
Filed October 14, 1980, Ser. No. 196,583

Claims priority, application Hungary, October 11, 1979, CI 1973

Int. Cl.³ C07D *413/06*; A61K *31/47*

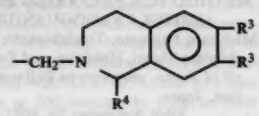
U.S. Cl. 546—148 3 Claims

1. A compound of the formula (I)



(I)

-continued



wherein

R^1 is hydrogen, phenyl, or phenyl substituted by one or two alkyl groups having 1 to 4 carbon atoms, halogens, alkoxy groups having 1 to 4 carbon atoms;

R^2 is phenyl or phenyl substituted by one or two alkyl groups having 1 to 4 carbon atoms, halogens, alkoxy groups having 1 to 4 carbon atoms;

R^3 is alkoxy having 1 to 4 carbon atoms or hydrogen;

R^4 is hydrogen, alkyl having 1 to 4 carbon atoms unsubstituted or substituted by a cyano group or 3,4-dimethoxybenzyl; m and n are each 0,1 or 2; or a pharmaceutically acceptable acid addition salt thereof.

4,365,065

1-(PYRIDINYL)-2-(DIMETHYLAMINO)ETHENYL LOWER-ALKYL KETONES

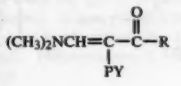
George Y. Lesher, and Richard E. Philion, both of Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 198,461, Oct. 20, 1980, Pat. No. 4,313,951, which is a continuation-in-part of Ser. No. 97,504, Nov. 26, 1979, abandoned. This application September 3, 1981, Ser. No. 299,292

Int. Cl.³ C07D *213/38*, *213/50*

U.S. Cl. 546—334 2 Claims

1. A 1-(pyridinyl)-2-(dimethylamino)ethenyl loweralkyl ketone having the formula



where R is lower-alkyl and PY is 4-, or 3- or 2-pyridinyl or 4-, 3- or 2-pyridinyl having one or two lower-alkyl substituents.

4,365,066

2(4-N-HEXADECYL AMINO OR OXY PHENYL) 5 ETHOXY OXAZOLEACETIC ACID DERIVATIVES

Tsutomu Yamanaka, Nakatsu; Mitsuharu Sano, Shinyoshitomimura, and Hiroshi Yasuda, Nakatsu, all of Japan, assignors to Yoshitomi Pharmaceutical Industries Ltd., Japan

PCT No. PCT/JP80/00287, § 371 Date July 28, 1981, § 102(e) Date April 14, 1981, PCT Pub. No. WO81/01553, PCT Pub. Date June 11, 1981

PCT Filed November 25, 1980, Ser. No. 253,932

Claims priority, application Japan, November 28, 1979, 54/154714

Int. Cl.³ C07D *263/42*; A61K *31/42*

U.S. Cl. 548—228 3 Claims

1. Ethyl 2-(4-n-hexadecyloxyphenyl)-5-ethoxy-oxazoleacetate.

3. Sodium 2-(4-n-hexadecylaminophenyl)-5-ethoxy-4-oxazoleacetate.

4,365,067

METHOD FOR PREPARING PHARMACOLOGICALLY ACTIVE CYANOGUANIDINE DERIVATIVE

Michitaro Fujimoto, Tondabayashi; Takaichi Fukui, Nara; Toshimitsu Mozai, Habikino, and Yoshikazu Funazo, Toyonaka, all of Japan, assignors to Fujimoto Pharmaceutical Corporation, Japan

Filed November 23, 1981, Ser. No. 324,017

Claims priority, application Japan, November 26, 1980, 55-166028

Int. Cl.³ C07D *233/64*

U.S. Cl. 548—342 **4 Claims**

1. A method for preparing a cyanoguanidine derivative which comprises the steps of:

(a) reacting a 4-methyl-5-hydroxymethylimidazole or a salt thereof with a 2-fluoro-1-alkyl pyridinium salt, wherein alkyl is methyl or ethyl, to provide an intermediate product, and

(b) reacting said intermediate reaction product with N-cyano-N′-methyl-N″-(2-mercaptoethyl)-guanidine to yield N-cyano-N′-methyl-N″-[2-{(4-methyl-5-imidazolyl)-methylthio}-ethyl] guanidine.

4,365,068

CROSSLINKABLE BIS-IMIDYL DERIVATIVES

Roland Darms, Therwil; Vratislav Kvita, Muttenz, and Gerd Greber, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

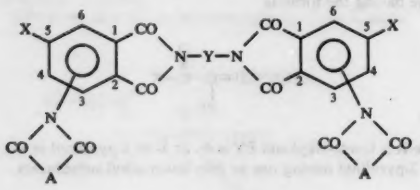
Division of Ser. No. 99,952, Dec. 3, 1979, Pat. No. 4,280,946, which is a division of Ser. No. 940,409, Sep. 7, 1978, Pat. No. 4,219,481, which is a division of Ser. No. 747,443, Dec. 6, 1976, Pat. No. 4,126,619. This application November 14, 1980, Ser. No. 206,923

Claims priority, application Switzerland, December 19, 1975, 16510/75

Int. Cl.³ C07D *403/14*

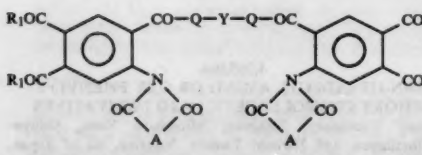
U.S. Cl. 548—435 **7 Claims**

1. A crosslinkable compound of the formula



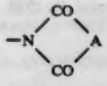
(Ia′)

or



(Ib)

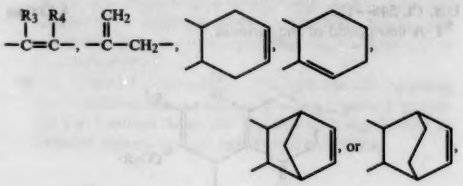
wherein the X s independently of one another represent hydrogen or, if the radical



is in the 4-position of the benzene ring, also —COR_2, the R_2 s independently of one another represent hydroxyl, phenoxy; phenoxy substituted by one or two nitro groups, by one alkyl of 1 to 2 carbon atoms, by one alkoxy of 1 to 2 carbon atoms or by two or five halogen atoms; alkoxy of 1 to 18 carbon atoms or an O−M+ group,

the R_1 s independently of one another have the same meaning as the R_2 s or two adjacent R_1 s together represent the —O— grouping,

the A s independently of one another represent a radical of the formula

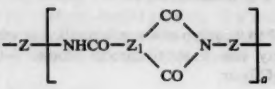


R_3 and R_4 independently of one another represent hydrogen, chlorine, bromine or methyl,

M+ represents an alkali metal cation, a trialkylammonium cation having 3–24 carbon atoms, or the benzyltrimethylammonium or tetramethylammonium cation,

Q represents —NH—, and

Y represents a structural element of the formula



(IIb)

wherein a represents a number from 1–100,

Z represents alkylene of 2 to 10 carbon atoms, 1,3-phenylene, 1,4-phenylene, the 4,4′-diphenylmethane group, the 4,4′-diphenylsulfone group or the 4,4′-diphenyl ether group, and

Z_1 represents a benzenetriyl group, in which the

group is bound to ortho carbons of Z_1.

4,365,069

USE OF IMPROVED MIXED VANADIUM PHOSPHORUS OXIDE CATALYST IN OXIDATION PROCESSES

Noel J. Bremer, Kent; Dennis E. Dria, Cleveland Heights, and Andrew M. Weber, Bedford Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed July 24, 1981, Ser. No. 286,434

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—260 **10 Claims**

1. A process for the production of maleic anhydride by the oxidation of 4 carbon atom hydrocarbons with molecular oxygen or an oxygen containing gas in the vapor phase at a reaction temperature of about 250° C. to about 600° C. in the presence of a catalyst containing the mixed oxides of vanadium and phosphorus, wherein said catalyst is prepared by

(a) introducing a pentavalent vanadium compound into an organic liquid reaction medium selected from alcohols and glycols capable of reducing at least a portion of the vanadium to a valence state of about +4 in the absence of corrosive reducing agents;

(b) introducing at least one pentavalent phosphorus compound into the reaction medium;

(c) effecting reduction of the vanadium prior or subsequent

to the addition of the phosphorus compound and reacting the vanadium with the phosphorus compound to form a catalyst precursor,

(d) removing from the reaction medium at least 1.5 moles of the organic liquid including organic oxidation byproducts per mole of vanadium reduced or reacted during the reduction or reaction;

(e) recovering the catalyst precursor from the reaction medium;

(f) drying the catalyst precursor; and

(g) calcining the catalyst precursor.

4,365,070

CHLOROCITRIC ACIDS

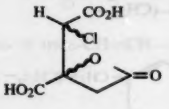
Robert W. Guthrie, Saddle Brook; Richard W. Kierstead, North Caldwell; Francis A. Mennona, Nutley, and Ann C. Sullivan, Cedar Grove, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 973,504, Dec. 26, 1978, Pat. No. 4,312,885. This application October 16, 1981, Ser. No. 312,041

Int. Cl.³ C07D *305/06*

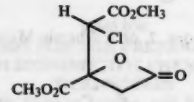
U.S. Cl. 549—263 **7 Claims**

1. A chlorocitric acid β-lactone of the formula



and stereoisomers, optical antipodes and pharmaceutically acceptable salts thereof.

5. A (±)-threo-chlorocitric acid β-lactone dimethyl ester of the formula



4,365,071

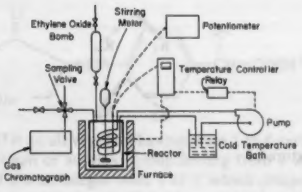
PRODUCTION OF ANHYDROUS 1,4-DIOXANE

Jean Yamanis, Lexington, Ky., assignor to The University of Kentucky Research Foundation, Lexington, Ky.

Filed May 20, 1980, Ser. No. 151,593

Int. Cl.³ C07D *319/04*

U.S. Cl. 549—377 **13 Claims**



Schematic of Experimental Set-up

1. A process for the preparation of 1,4-dioxane which comprises contacting ethylene oxide in the liquid phase with an effective amount of an acidic cation exchange resin at a first temperature and for a time sufficient to yield an ester intermediate reaction product of said ethylene oxide and said cation exchange resin, and thereafter heating said ester intermediate reaction product at a second temperature higher than said first temperature and for a time period sufficient to dissociate said reaction product and thereby yield 1,4-dioxane.

2. A process for the preparation of 1,4-dioxane which comprises contacting ethylene oxide in the liquid phase with an effective amount of an acidic cation exchange resin at a temperature in the range of about −20° C. to 90° C. and for a time period of about 5 minutes to 200 minutes to yield an ester intermediate reaction product of said ethylene oxide and said cation exchange resin, thereafter heating said ester intermediate reaction product at a higher temperature of about 80° C. to 140° C. and for a time period of about 60 minutes to 300 minutes, and then recovering the 1,4-dioxane formed as a result of said heating.

4,365,072

BIPHENYL ALDEHYDES

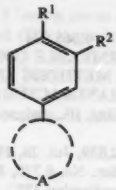
Avinash C. Mehta, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed October 22, 1981, Ser. No. 313,942

Int. Cl.³ C07D *304/06, 307/12;* C07C *69/773*

U.S. Cl. 549—415 **13 Claims**

1. A compound of the formula



wherein one of R^1 and R^2 is hydrogen and the other is —CHO and the cyclic moiety A is -2,5-; -2,3-; or -3,4-di-OR-1-phenyl moiety wherein R is hydrogen or a hydroxy-protecting group capable of removal so as to regenerate the hydroxy group.

2. A compound of claim 1 wherein R is a hydroxy-protecting group selected from the group consisting of lower alkyl having 1 to 6 carbon atoms, methoxymethyl, methylthiomethyl, phenacyl, p-bromophenacyl, 2-tetrahydrofuranyl, 2-tetrahydropyranyl, ethoxycarbonyl, 2,2,2-trichloroethoxycarbonyl, and acyl.

4,365,073

DERIVATIVES OF CYANO-SUBSTITUTED KETONES AND ALDEHYDES

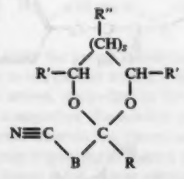
Bart J. Bremmer, Ashland, Mass., and Robert L. Reierson, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed October 20, 1980, Ser. No. 198,572

Int. Cl.³ C07D *317/10, 319/04*

U.S. Cl. 549—451 **8 Claims**

1. A compound of the formula

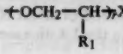


wherein

R is hydrogen, phenyl, or a monovalent radical of from 1 to 10 carbons selected from the group consisting of branched or linear alkyl and cyano-, hydroxy-, alkoxy-, acyloxy-, and organosiloxy-substituted derivatives thereof;

B is a divalent radical of from 2 to 10 carbons selected from the group consisting of branched or linear alkylene and $-(CH_2)_m-OCH_2CH(R_1)-_n$, where R_1 is hydrogen, methyl or ethyl, and m and n are integers equal to or greater than one;

R' independently each occurrence is selected from the group consisting of hydrogen and $C_qH_{2q}X$, where q is an integer from 1 to 4, and X is hydroxy, acyloxy, organosiloxy or



where r is an integer from 1 to 4, X' is hydroxy, alkoxy, aralkoxy, acyloxy or organosiloxy, and R_1 is as previously defined;

R'' is hydrogen or X; and

s is zero or one;

provided that if s is zero then in at least one occurrence R' is not hydrogen, or if s is one then in at least one occurrence at least one of either R' or R'' is not hydrogen.

4,365,074

OXYGEN-PERMEABLE CONTACT LENS COMPOSITIONS, METHODS AND ARTICLES OF MANUFACTURE

Nick N. Novicky, Wheeling, Ill., assignor to George F. Tsuetaki, Chicago, Ill.

Division of Ser. No. 172,839, Jul. 28, 1980, Pat. No. 4,314,068, which is a division of Ser. No. 6,725, Jan. 26, 1979, Pat. No. 4,216,303. This application 1982, Ser. No. 340,819

Int. Cl.³ C07F 7/08

U.S. Cl. 556—442 **1 Claim**

1. A new composition of matter, particularly adapted for use in the production of polymers for making contact lens materials, said composition comprising tris(trimethylsiloxy) acetoxysilane.

4,365,075

ω-ARYL-PGD COMPOUNDS

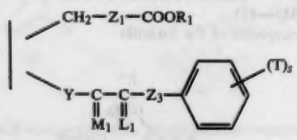
Douglas R. Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184. This application December 30, 1976, Ser. No. 756,100

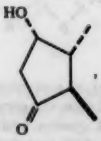
Int. Cl.² C07C 69/76

U.S. Cl. 560—51 **142 Claims**

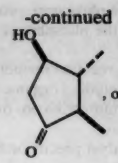
1. A prostaglandin analog of the formula



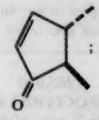
wherein D is



-continued



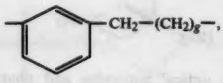
, or



;

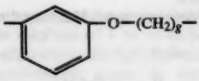
wherein Y is cis-CH=CH—, trans-CH=CH—, or $-CH_2C-H_2-$; wherein Z_1 is

1. cis-CH=CH—CH_2—$(CH_2)_g$—CF_2—,
2. cis-CH=CH—CH_2—$(CH_2)_g$—CH_2,
3. cis-CH_2—CH=CH—$(CH_2)_g$—CH_2—,
4. —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
5. —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
6. —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
7. —$(CH_2)_2$—O—$(CH_2)_g$—CH_2—,
8. —$(CH_2)_3$—O—$(CH_2)_g$—,



(9)

or



(10)

wherein g is one, 2, or 3; wherein M_1 is

or

wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_1 is

or a mixture of

and

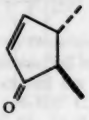
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein Z_3 is oxa or methylene:

wherein T is chloro, fluoro, trifluoromethyl, alkyl of 1 to 3 carbon atoms, inclusive, or alkoxy of 1 to 3 carbon atoms, inclusive, and s is 0, 1, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that Z_3 is oxa only when R_3 and R_4 are hydrogen or methyl, being the same or different; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; with the further proviso that

D is



only when Y is cis- or trans-CH=CH—.

4,365,076

PROCESS FOR THE PREPARATION OF CYCLOALKYLIDENEMETHYLPHENYLACETIC ACID DERIVATIVES

Atsusuke Terada; Shigeru Tanaka, and Eiichi Misaka, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

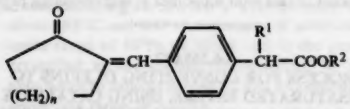
Division of Ser. No. 929,937, Aug. 1, 1978, Pat. No. 4,254,274. This application October 14, 1980, Ser. No. 197,229

Claims priority, application Japan, August 16, 1977, 52/98121

Int. Cl.³ C07C *69/76*

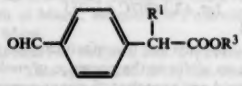
U.S. Cl. 560—51 **14 Claims**

1. A process for the preparation of a compound having the formula



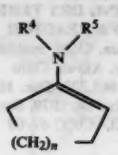
(I)

wherein R^1 is an alkyl group having from 1 to 4 carbon atoms, R^2 is hydrogen or an alkyl group having from 1 to 4 carbon atoms, and n is an integer from 1 to 3, which comprises reacting a compound having the formula



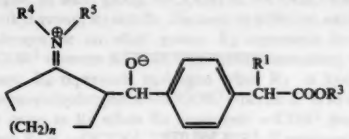
(II)

wherein R^1 is as defined above and R^3 represents a lower alkyl group with a compound having the formula



(III)

wherein R^4 and R^5 represent a lower alkyl group or, together with the nitrogen atom to which they are attached, may jointly form a cyclic amino group optionally having a ring oxygen atom and n is as defined above to produce a compound having the formula



(IV)

wherein R^1, R^3, R^4, R^5 and n are as defined above and hydrolyzing said compound (IV) to produce said compound of the formula (I).

4,365,077

11-DESOXY-16-ARYLOXY-ω-TETRANORPROSTAGLANDINS

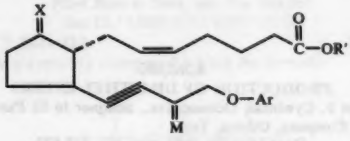
Jasjit S. Bindra, Groton; James F. Eggler, Stonington; Michael R. Johnson, Gales Ferry, and Thomas K. Schaaf, Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 589,386, Jun. 23, 1975, abandoned. This application 1979, Ser. No. 13,899

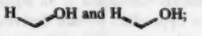
Int. Cl.³ C07C *177/00*

U.S. Cl. 560—53 **12 Claims**

1. The optically active compounds of the structure



their optical antipodes and the racemates thereof wherein X and M are selected from the group consisting of keto,



R' is selected from the group consisting of hydrogen, alkyl of from one to ten carbon atoms, aralkyl of from seven to nine carbon atoms, cycloalkyl of from three to eight carbon atoms, α-naphthyl, β-naphthyl, phenyl and monosubstituted phenyl wherein the phenyl substituent is selected from the group consisting of fluoro, chloro, bromo, trifluoromethyl, lower alkyl, lower alkoxy and phenyl; and

Ar is selected from the group consisting of phenyl, α-naphthyl, β-naphthyl and monosubstituted phenyl wherein the substituent is selected from the group consisting of fluoro, chloro, bromo, lower alkyl, lower alkoxy, phenyl and trifluoromethyl.

4,365,078

PROCESS FOR CHARGING DRY TEREPHTHALIC ACID INTO A REACTOR

Lawrence E. Shelley, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 861,333, Dec. 16, 1977, abandoned.
This application May 14, 1979, Ser. No. 39,039
Int. Cl.[3] C07C *67/08*
U.S. Cl. 560—94 3 Claims

1. In a continuous process for reacting terephthalic acid with liquid glycol in an esterification reaction vessel maintained at elevated temperatures and pressures the improvement which comprises forming a suspension of solid particulate terephthalic acid in nitrogen gas, maintaining said suspension under pressure and charging said suspension into said reaction vessel to which liquid glycol is being charged separately.

4,365,079

RECOVERY OF DIMETHYL SEBACATE FROM AN ISOMERIC MIXTURE OF C_{12} ESTERS

Chao-Yang Hsu, Media, and Haven S. Kesling, Jr., Drexel Hill, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed 1981, Ser. No. 222,477
Int. Cl.[3] C07C *67/52, 67/303*
U.S. Cl. 560—191 6 Claims

1. A process for recovering dimethyl sebacate from a reaction mixture containing dimethyl sebacate in predominant amount and minor amounts of other dimethyl esters of C_{10}-dicarboxylic acids which comprises stepwise recrystallizing dimethyl sebacate from said reaction mixture using a solvent selected from the group consisting of acetone, diethyl ether, tetrahydrofuran, alkanols having 1 to 4 carbon atoms, aromatic hydrocarbons having 6 to 12 carbon atoms, alkanes and alkenes having 5 to 8 carbon atoms and a mixture of one of said solvents which is miscible with water, and water.

4,365,080

PRODUCTION OF DIMETHYL ESTERS

Norbert F. Cywinski, Odessa, Tex., assignor to El Paso Products Company, Odessa, Tex.

Filed May 20, 1981, Ser. No. 265,632
Int. Cl.[3] C07C *67/08*
U.S. Cl. 560—204 12 Claims

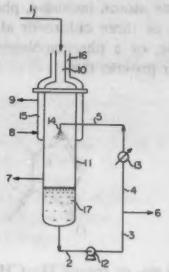
1. In a process for producing methyl esters of C_4–C_6 carboxylic acid components contained in an aqueous filtrate, which filtrate is a waste byproduct stream derived from the production of adipic acid by nitric acid oxidation of cyclohexanone/-cyclohexanol, the improvement which comprises the steps of (1) concentrating the volume of the aqueous filtrate medium by the partial removal of water and the volatile components which co-distill with water to provide a concentrate solution; (2) admixing the concentrate solution with methanol, and heating the solution at a temperature between about 60° C.–90° C. to form methyl esters of the C_4–C_6 carboxylic acid components; (3) extracting the methyl ester components by contacting the esterification medium with a water-immiscible organic solvent at a temperature between about 40° C.–90° C.; and (4) separating the immiscible organic solvent phase and aqueous phase.

4,365,081

PROCESS FOR PRODUCING 2-HYDROXYALKYL ACRYLATES OR METHACRYLATES

Noboru Shimizu, Takatsuki; Hiroshi Yoshida, Toyonaka; Hiromiki Daigo, Minoo; Shiyouichi Matumoto, Ikeda, and Hiroyoshi Uchino, Takatsuki, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Filed May 15, 1981, Ser. No. 263,935
Claims priority, application Japan, May 20, 1980, 55/65906; May 20, 1980, 55/65907; May 27, 1980, 55/69603; March 20, 1981, 56/39322
Int. Cl.[3] B01D *3/34;* C07C *67/26, 67/48*
U.S. Cl. 560—209 17 Claims



1. In a process for producing 2-hydroxyalkyl acrylate or methacrylate ester monomer by esterifying acrylic acid or methacrylic acid with an alkylene oxide having 2 to 4 carbon atoms in the presence of an esterification catalyst and distilling the resulting reaction mixture in a distillation column in which the ester monomer is vaporized, and a distillation residue is formed, the improvement comprising

superheating the vapor of the ester monomer from the distillation column,

providing a condenser of the gas-liquid direct contact type having a gas inlet portion,

maintaining the inner wall of the gas inlet portion at a temperature below the boiling point of the ester monomer at the operating pressure within said condenser,

introducing the superheated vapor of the ester monomer into the condenser through said gas inlet portion,

spraying said condenser, in the direction of, and in contact with said superheated vapor of the ester monomer introduced into the condenser, with a liquid of said ester monomer, at a temperature below the boiling point of said ester monomer at said operating pressure whereby said vapor is condensed to a liquid at said temperature below the boiling point of said ester monomer at said operating pressure.

4,365,082

PROCESS FOR CONVERTING OLEFINS TO UNSATURATED ESTERS, USING CATALYSTS CONTAINING PALLADIUM HYDROXAMATES

Jean P. Laloz, Marly le Roi; Hubert Mimoun, Rueil-Malmaison; Jean J. Rouxel, Longuesse, and Lucien Saussine, Chatou, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed June 26, 1981, Ser. No. 277,542
Claims priority, application France, June 26, 1980, 80 14289
Int. Cl.[3] C07C *67/055*
U.S. Cl. 560—243 23 Claims

1. In a catalytic process for manufacturing an unsaturated ester by oxidizing an olefin in the presence of molecular oxygen, a carboxylic acid and a catalyst, the improvement wherein said catalyst comprises an organometallic palladium complex having the formula PdAA′, wherein A is a hydroxamate anion;

and A′ is an identical or different hydroxamate anion or a carboxylate anion.

4,365,083

PREPARATION OF ALKYL CARBOXYLATES

Lewis B. Young, Skillman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed December 19, 1980, Ser. No. 217,979
Int. Cl.³ C07C *67/04*
U.S. Cl. 560—247 **6 Claims**

1. A method for the preparation of a C_8-alkyl carboxylate reaction product enriched in 2-octyl carboxylate, said method comprising:

reacting a carboxylic acid compound having the formula:

wherein R is alkyl of 1 to 10 carbon atoms with 4-octene in the presence of a dealuminized mordenite zeolite catalyst, said reaction being carried out at a temperature of between about 25° C. and 600° C. and a pressure of from about 10^4 Pa. to 10^7 Pa., to thereby produce an octyl carboxylate reaction product containing more of the 2-octyl carboxylate than of the 4-octyl carboxylate.

4,365,084

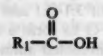
PREPARATION OF ALKYL CARBOXYLATES

Lewis B. Young, Skillman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed December 19, 1980, Ser. No. 218,148
Int. Cl.³ C07C *67/04*
U.S. Cl. 560—247 **12 Claims**

1. A method for the preparation of an alkyl carboxylate reaction product containing α-methylalkyl carboxylates as the major alkyl carboxylate product, said method comprising:

reacting a carboxylic acid having the formula



wherein R_1 is alkyl, aryl, haloalkyl or hydrogen; with a linear or slightly branched olefinic compound having up to about 20 carbon atoms therein, and said olefinic compound further having no unsaturation at the site of the #2 carbon atom;

said reaction being carried out at a temperature of between about 250° C. and 600° C., a pressure of within the approximate range of 10^4Pa to 10^7Pa, and in the presence of a crystalline zeolite catalyst characterized by a silica to alumina mole ratio of at least 12 and a Constraint Index of within the range of 1 to 12.

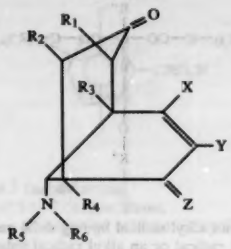
4,365,085

BICYCLIC REDUCTONE DEVELOPING AGENTS

James R. Bartels-Keith, Lexington, and Eva R. Karger, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 881,544, Feb. 27, 1978, Pat. No. 4,154,611.
This application 1979, Ser. No. 9,745
Int. Cl.³ C07C *97/07, 102/06, 103/44, 103/46, 119/00, 119/06*
U.S. Cl. 560—251 **15 Claims**

1. A compound of the formula



wherein R_1 and R_2, the same or different, each represent hydrogen, an alkyl group, —COOH or —$COOR^1$ wherein R^1 is an alkyl group; R_3 and R_4, the same or different, each represent hydrogen or an alkyl group, R_5 represents hydrogen or —COR^2 wherein R^2 is an alkyl group containing 1-6 carbon atoms; R_6 represents hydrogen when R_5 is hydrogen and represents hydrogen or —$OCOR^3$ wherein R^3 is an alkyl group the same as R^2 when R_5 represents —COR^2 provided that when R_6 is —$OCOR^3$, Y is —$OCOR^5$; X represents —OH or —NH_2 when Y is —OH or X represents —$NHCOR^4$ wherein R^4 represents an alkyl group the same as R^2 when Y is —$OCOR^5$; Y represents —OH or —$OCOR^5$ wherein R^5 represents an alkyl group the same as R^2; and Z represents O when Y is —OH or $NCOR^6$ wherein R^6 is an alkyl group the same as R^2 when Y is —$OCOR^5$.

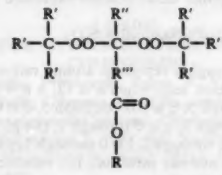
4,365,086

POLYPEROXY COMPOUNDS

Wilbur H. McKellin, Buffalo; Orville L. Mageli, Kenmore, and Antonio J. D'Angelo, Buffalo, all of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

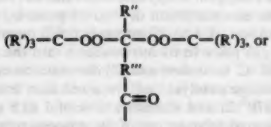
Filed June 6, 1963, Ser. No. 285,857
Int. Cl.³ C08F *8/00; C07C 69/00*
U.S. Cl. 562—512 **3 Claims**

1. A polyperoxy compound having the formula:

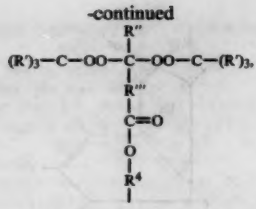


where:

R is selected from the group consisting of hydrogen,



-continued



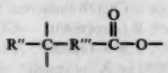
$(R')_3$—C— is an alkyl radical having 4–24 carbon atoms;

R'' is an alkyl radical or an alkyl radical substituted by the —$COOR^5$ group, said R^5 is alkyl having 1–18 carbon atoms;

R''' is a covalent bond or an alkylene diradical;

and

R^4 is an alkylene diradical having 2–6 carbon atoms, an alkaline earth metal ion or a zinc ion; and



has 3–18 carbon atoms.

4,365,087

PRODUCTION OF ACRYLIC ACID

Koju Kadowaki; Kohei Sarumaru, both of Ibaraki, and Takeshi Shibano, Yokkaichi, all of Japan, assignors to Mitsubishi Petrochemical Company Limited, Japan

Filed 1980, Ser. No. 116,445

Claims priority, application Japan, 1979, 54-8766

Int. Cl.³ C07C *51/25, 57/04, 57/055*

U.S. Cl. 562—534 **7 Claims**

1. In a process for producing acrylic acid by a two-stage, vapor-phase catalytic oxidation which comprises subjecting a mixture gas of propylene, steam, and air to a first-stage reaction thereby to convert the propylene into, principally, acrolein and subjecting the gaseous product formed in the first-stage reaction to a second-stage reaction thereby to convert the acrolein into, principally, acrylic acid, in the presence of a multicomponent catalyst which comprises molybdenum and/or vanadium capable of providing a conversion of acrolein of 90% or more at a reaction temperature of about 220 to 340 C with a contact time of about 0.5 to 6 seconds, the improvement which comprises carrying out said oxidation under the conditions:

A. that a composite oxide catalyst expressed by the formula

$$Mo_aBi_bNi_cCo_dFe_eNa_fMn_gB_hK_iSi_jO_x,$$

where a through x represent atomic ratios of the respective elements, and, when a is 12, b is 4 through 7, c is 0.05 through 5, d is 0.05 through 5, e is 0.05 through 2, f is 0 through 1, g is 0 through 1, (f+g) is 0.01 through 1, h is 0.02 through 2, i is 0 through 1, j is 6 through 48, and x is a number satisfying the valence of an element other than oxygen,

is used in the first-stage reaction;

B. that (1) the composition of said mixture gas supplied to a bed of the catalyst in the first-stage reaction is characterized by an oxygen/propylene mol ratio of (1.1 to 2.0)/1, a propylene concentration of 7 to 13 percent, and a steam concentration of 2 to 30 percent, the temperature of the mixture gas prior to its introduction into the catalyst bed being 260° C. or lower, and (2) the reaction conditions on the first-stage catalyst bed are a reaction temperature of 260° to 370° C. and a contact time of 1 to 8 seconds; and

C. that a second mixture gas of the gaseous product formed in the first-stage reaction and a gas resulting from addition of air or oxygen gas to a waste gas separated from gaseous product formed in the second-stage reaction is supplied to a bed of the catalyst in the second-stage reaction, (1) the oxygen content of the second mixture gas being such that the mol ratio X/Y, wherein X is the sum of the quantity of oxygen in the mixture gas subjected to the first-stage reaction and the quantity of oxygen thus added to the waste gas, and Y is the quantity of propylene in the mixture gas subjected to the first-stage reaction, will be (1.6 to 2.8)/1, and (2) the temperature of the second mixture gas prior to its introduction into the second-stage catalyst bed being 280° C. or lower, said waste gas being a portion of a waste gas which results from cooling of the gaseous product formed in the second-stage reaction and removal therefrom of a greater part of the acrylic acid therein by condensation.

4,365,088

PROCESS FOR THE MANUFACTURE OF β-HYDROXYBUTYRIC ACID AND ITS OLIGOCONDENSATES

Noël Vanlautem, Wavre, and Jacques Gilain, Brussels, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed July 2, 1981, Ser. No. 280,082

Claims priority, application France, July 3, 1980, 80 14889

Int. Cl.³ C07C *59/00*

U.S. Cl. 562—579 **10 Claims**

1. Process for the manufacture of β-hydroxybutyric acid or its oligocondensates from its polycondensates, comprising subjecting the polycondensates to hydrolysis in a liquid reaction mixture containing a solvent, the polycondensates, an acid catalyst and water.

4,365,089

SYNTHESIS OF UREA

Hiroshi Ono, Fujisawa; Hidetsugu Fujii, Mobara, and Shigeru Inoue, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed August 18, 1981, Ser. No. 293,926

Claims priority, application Japan, September 5, 1980, 55/122328

Int. Cl.³ C07C *126/02*

U.S. Cl. 564—67 **5 Claims**

1. A process for synthesizing urea comprising reacting ammonia and carbon dioxide in a molar ratio of 3:1–5:1 and at a urea synthesis pressure of 150–250 Kg/cm^2G to form a urea synthesis effluent containing urea, water, unreacted ammonia and unreacted carbon dioxide, subjecting said urea synthesis effluent to a stripping step using gaseous carbon dioxide at a pressure substantially equal to said urea synthesis pressure and at a temperature of 195°–210° C. to separate unreacted ammonia and carbon dioxide therefrom and thereby to obtain a urea solution containing 10–15% by weight of unreacted ammonia, further separating unreacted ammonia and carbon dioxide from the urea solution at a pressure of 10–30 Kg/cm^2G and a temperature of 150°–170° C. to obtain a urea solution containing 8% by weight or less of unreacted ammonia, and subjecting the latter urea solution to a separation step of unreacted ammonia and carbon dioxide which step is operated at a pressure lower than the latter pressure of 10–30 Kg/cm^2G.

4,365,090

PROCESS FOR PRODUCTION OF ACRYLAMIDE

Shiro Asano, Takaishi, Japan, assignor to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,949

Claims priority, application Japan, June 15, 1980, 55-77153

Int. Cl.³ C07C *102/08*

U.S. Cl. 564—127 **12 Claims**

1. In a process for producing acrylamide which comprises catalytically hydrating acrylonitrile with water in the presence

of a copper-based catalyst, the improvement wherein during the reaction acetone is adjusted to a concentration of 30 to 10,000 ppm in the reaction solution comprising acrylonitrile, water and acrylamide.

4,365,091

METHOD FOR THE PRODUCTION OF ACRYLAMIDE

Takenaka Masaaki, Chiba; Tsutomu Takahashi, Ichihara, and Tatuya Momobayashi, Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed November 2, 1981, Ser. No. 317,335

Claims priority, application Japan, November 6, 1980, 55-156793; November 6, 1980, 55-156794

Int. Cl.³ C07C *102/08*

U.S. Cl. 564—127 5 Claims

1. In the method for the production of acrylamide by catalytic hydration of acrylonitrile, the improvement comprising using a compound oxide catalyst which is prepared by a precipitation process and represented by the formula,

$$Ti_aX_bY_cO_d$$

wherein Ti is titanium, X is one of zinc, cadmium and copper, Y is either nickel or lanthanum and the atomic ratios a, b and c are 15 to 98, 2 to 85 and 0 to 20, respectively and d is the number of oxyten atoms satisfying the valence of the other elements.

4,365,092

PROCESS FOR THE PREPARATION OF METHACRYLAMIDE FROM METHYLMETHACRYLATE

Kenneth E. Harwell, Merriam, Kans., assignor to Cook Paint and Varnish Company, Kansas City, Mo.

Filed July 13, 1978, Ser. No. 924,900

Int. Cl.³ C07C *102/06*

U.S. Cl. 564—135 2 Claims

1. A process for the preparation of methacrylamide by the reaction of methylmethacrylate and ammonia comprising:

(a) adding methylmethacrylate and a surfactant to an aqueous solution of ammonium hydroxide wherein said ammonium hydroxide is used in amounts such that a molar excess of ammonium hydroxide is used per mol of methylmethacrylate to form a reaction mixture comprising a methylmethacrylate oil phase and an ammonium hydroxide aqueous phase;

(b) stirring said reaction mixture and maintaining the same at a temperature in the range of about 10° C. to 50° C. until said oil phase and said aqueous phase become a single phase and the reaction is completed; and

(c) recovering methacrylamide from the resultant single phase reaction mixture comprising ammonia, water, methanol and methacrylamide, ammonia gas being continuously added to said reaction mixture as the reaction proceeds so as to resaturate the reaction mixture with ammonia gas while the reaction proceeds, the recovered methacrylamide being characterized by its compatibility for the preparation of isocyanate resins.

4,365,093

ETHYNYLBENZENE COMPOUNDS AND DERIVATIVES THEREOF

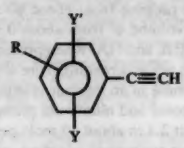
Julius Diamond, Morris Plains, N.J., assignor to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 574,837, May 14, 1975, Pat. No. 4,288,457, which is a continuation of Ser. No. 431,254, Jan. 7, 1974, Pat. No. 3,923,910. This application November 23, 1976, Ser. No. 744,331

Int. Cl.³ C07C *87/50*

U.S. Cl. 564—307 5 Claims

1. A compound of the formula:



where R is:

alkyl of 1 to 7 carbon atoms,

cycloalkyl of 5 to 7 carbon atoms,

1 to 7 carbon atoms alkyl substituted cycloalkyl of 5 to 7 carbon atoms,

cycloalkenyl of 5 to 7 carbon atoms,

phenyl or

substituted phenyl having a single substituent which is Y'';

Y and Y' are each selected from the group consisting of:

hydrogen,

halo,

amino, and

mono and diloweralkylamino;

Y'' is a member selected from the group consisting of:

Y,

lower alkyl of 1 to 7 carbon atoms,

trifluoromethyl and

halo,

with the proviso that at least one of Y and Y' is other than hydrogen and halo.

4,365,094

PROCESS FOR THE SYNTHESIS OF TERTIARY PHOSPHINE OXIDES, AND NEW TERTIARY PHOSPHINE OXIDES

Sylvie L. Boileau; Thanh-Dung N'Guyen, both of Paris, and Jean-Claude C. Gautier, Ablon sur Seine, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed December 5, 1980, Ser. No. 213,212

Claims priority, application France, December 28, 1979, 79 31917

Int. Cl.³ C07F *9/53*

U.S. Cl. 568—14 12 Claims

1. Process for the synthesis of tertiary phosphine oxides from a secondary phosphine oxide and a halogenomethyl derivative, in the presence of a base, wherein a secondary phosphine oxide is reacted with a halogenomethyl derivative in an organic medium immiscible with water, in the presence of an aqueous phase containing an inorganic base and in the presence of a phase transfer catalyst and whilst stirring.

4,365,095

PROCESS FOR HYDROGENATING UNSATURATED COMPOUNDS

George Marcelin, Pittsburgh; Roger F. Vogel, Butler, and Harold E. Swift, Gibsonia, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed August 3, 1981, Ser. No. 289,538

Int. Cl.³ C07C *45/62, 29/14, 5/03*

U.S. Cl. 568—462 19 Claims

1. A process for hydrogenating an unsaturated aliphatic organic compound having from two to 20 carbon atoms which comprises contacting the same with hydrogen in the presence of a catalyst composed of about three to about 60 weight percent nickel mounted on an amorphous support containing (1) (A) a Group IIB metal compound selected from the group consisting of zinc and cadmium compounds, (B) a combination of said zinc and cadmium compounds or (C) a combination of at least one of said Group IIB metal compounds with at least one Group IIA metal compound selected from the group consisting of magnesium, calcium, strontium and barium compounds, (2) alumina and (3) aluminum phosphate, such support

having an average pore radius of from about 10 A to about 300 A, a surface area ranging from about 80 m^2/g to about 350 m^2/g and a pore volume of from about 0.3 cc/g to about 1.5 cc/g, said Group IIB, and IIA, when present, metal compound being present in an amount ranging from about two to about 35 mole percent, alumina in an amount ranging from about 15 to about 60 mole percent and aluminum phosphate in an amount ranging from about 2.5 to about 80 mole percent, wherein said unsaturated organic compound is passed over said catalyst at a liquid hourly space velocity of about 0.1 to about 20 while maintaining in the reaction zone a temperature of about 30° to about 350° C. and a hydrogen partial pressure of about 0 to about 1500 pounds per square inch gauge.

4,365,096

ALKYL-SUBSTITUTED BICYCLOALKYL ETHERS

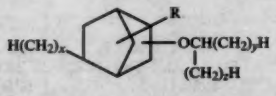
Edward C. Y. Nieh, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed June 25, 1981, Ser. No. 277,369

Int. Cl.³ C07C *43/18*

U.S. Cl. 568—665 **6 Claims**

1. Alkyl-substituted bicycloalkyl alkyl ethers of the formula



wherein R is selected from the group consisting of hydrogen and methyl, x is an integer ranging from 4 to 18, y and z are integers ranging from 0 to 16 whose sum must be 8 to 22 and the sum of x+y+z must be 20 to 36.

4,365,097

PROCESS FOR THE PREPARATION OF HALOGENATED ALIPHATIC ETHERS

Ross C. Terrell, Clark, and Kirsten Hansen, Berkeley Heights, both of N.J., assignors to Airco, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 63,302, Aug. 2, 1979, abandoned. This application March 16, 1981, Ser. No. 244,384

Claims priority, application Canada, May 20, 1980, 352253; Italy, June 5, 1980, 22578 A/80; France, July 21, 1980, 80 16062; United Kingdom, July 24, 1980, 8024272; Fed. Rep. of Germany, July 31, 1980, 3029134

Int. Cl.³ C07C *41/01*

U.S. Cl. 568—684 **11 Claims**

1. A process comprising reacting, in the liquid phase, a compound of the formula:

$CF_2X\text{-}CY_2Z$

where

X or Br or Cl;

Y is Br or Cl; and

Z is Br, Cl, or F;

with a primary or secondary alkanol and an inorganic base, in the presence of a catalyst selected from the group consisting of copper, the salts of copper, silver, cobalt, rubidium, aluminum, manganese, nickel, molybdenum, chromium, antimony, and vanadium, the primary, secondary and tertiary alkanol amines and mixtures of any two or more thereof, and recovering an ether reaction product.

4,365,098

FLUORINATED DIPHENOLS AND METHOD FOR THEIR PREPARATION

Victor Mark, Evansville, and Charles V. Hedges, Mount Vernon, both of Ind., assignors to General Electric Company, Mount Vernon, Ind.

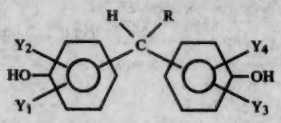
Filed December 31, 1980, Ser. No. 221,884

The portion of the term of this patent subsequent to November 9, 1999, has been disclaimed.

Int. Cl.³ C07C *39/16*

U.S. Cl. 568—726 **16 Claims**

1. A fluorinated bisphenol having the general formula



wherein R is a fluorinated alkyl or fluorinated aryl radical, and Y_1, Y_2, Y_3 and Y_4 are each independently selected from the group consisting of hydrogen, alkyl radical, chlorine and bromine.

4,365,099

PROCESS FOR THE PRODUCTION OF BISPHENOLS

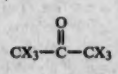
Gary R. Faler, Scotia, and Ashok K. Mendiratta, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 12, 1981, Ser. No. 262,739

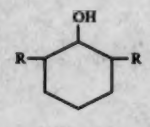
Int. Cl.³ C07C *39/16, 37/20*

U.S. Cl. 568—726 **14 Claims**

1. In a method for the condensation of a carbonyl compound selected from the class consisting of, cycloheptanone, acetophenone, benzophenone and compounds of the general formula:



wherein X is independently selected from the class consisting of hydrogen, fluorine, monovalent alkyl groups, from 1 to 8 carbon atoms, aryl groups and alkaryl groups with a phenolic compound of the general formula:



wherein R is independently selected from the class consisting of hydrogen fluorine monovalent alkyl groups from 1 to 8 carbon atoms, aryl groups and alkaryl groups for the production of bis(hydroxyaryl) compounds, whereby at least two moles of said phenolic compound are caused to react with one mole of said carbonyl compound in the presence of a cationic exchange resin in a reaction zone; the improvement comprising pretreating said phenolic compound by contacting said phenolic compound with a chelating resin to remove impurities and thereafter mixing said phenolic compound with said carbonyl compound.

4,365,100

PROCESS FOR THE PREPARATION OF 1,2,3,4-TETRAHYDRO-9,10-ANTHRACENE-DIOL

Serge Y. DeLavarenne, Francheville-le-Haut, and Pierre Tellier, Sainte-Foy-les-Lyon, both of France, assignors to PCUK - Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed June 26, 1979, Ser. No. 52,282
Claims priority, application France, June 29, 1978, 78 19465
Int. Cl.³ C07C *39/17*
U.S. Cl. 568—733 10 Claims

1. A process for the preparation of 1,2,3,4-tetrahydro-9,10-anthracene-diol from 1,4,4a,9a-tetrahydroanthraquinone which comprises effecting a catalytic hydrogenation in the liquid phase of 1,4,4a,9a-tetrahydroanthraquinone to convert it into 1,2,3,4,4a,9a-hexahydro-9,10-anthracene-dione or into a mixture of 1,2,3,4-tetrahydro-9,10-anthracene-diol and 1,2,3,4,4a,9a-hexahydro-9,10-anthracene dione, and then effecting isomerization of the latter in the presence of an acid to give 1,2,3,4-tetrahydro-9,10-anthracene-diol.

4,365,101

PROCESS FOR PREPARING BENZOTRIFLUORIDE AND ITS DERIVATIVES

Tsuneo Nakagawa, Ibaraki; Uji Hiramatsu, Takatsuki, and Toshihide Honda, Toyonaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed December 12, 1977, Ser. No. 859,755
Claims priority, application Japan, December 27, 1976, 51-159033
Int. Cl.³ C07C *17/20*
U.S. Cl. 570—145 6 Claims

1. A process for preparing benzotrifluoride which comprises contacting benzotrichloride with hydrogen fluoride in the absence of any catalyst in the gaseous phase and in the presence of chlorine at an elevated temperature.

4,365,102

METHOD OF MANUFACTURING PERFLUOROMETHANE AND PERFLUOROETHANE

Maurice J. Couture, Parkersburg, W. Va., and Dan Hayashi, Shimizu, Japan, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed September 29, 1980, Ser. No. 191,921
Int. Cl.³ C07C *17/24*
U.S. Cl. 570—163 2 Claims

1. A method of manufacturing CF_4 and C_2F_6 which comprises heating tetrafluoroethylene and carbon dioxide at a mol ratio of TFE to CO_2 in the range of 3:1 to 1:10 at a temperature in the range of 1100° C. to 1300° C. and separating the resulting products.

4,365,103

PROCESS FOR THE PREPARATION OF BIS(1-PHENYLETHENYL) COMPOUNDS

Kuo Y. Chang, and Sterling C. Gatling, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed December 4, 1981, Ser. No. 327,322
Int. Cl.³ C07C *15/12*
U.S. Cl. 585—320 9 Claims

1. A method for the preparation of bis(1-phenylethenyl-)aromatic compounds, the steps of the method comprising providing a 1,1-diphenylethane, disproportionating the 1,1-diphenylethane in the presence of a Friedel-Craft's catalyst to form a bis(1phenylethyl)aromatic compound and subsequently dehydrogenating the bis(1-phenylethyl)aromatic compound to a bis(1-phenylethenyl)aromatic compound.

4,365,104

PARA-SELECTIVE ZEOLITE CATALYSTS TREATED WITH SULFUR COMPOUNDS

Warren W. Kaeding, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed June 26, 1981, Ser. No. 277,486
Int. Cl.³ C07C *2/68*
U.S. Cl. 585—467 12 Claims

1. A process for converting aromatic compounds to a dialkyl benzene compound mixture highly enriched in the para-dialkylbenzene isomer, said process comprising contacting said aromatic compounds under conversion conditions with a modified zeolite based catalyst comprising a crystalline zeolite material characterized by a silica to alumina ratio of at least 12 and a constraint index of from about 1 to 12, said catalyst having been contacted with a sulfur-based treating agent selected from hydrogen sulfide and sulfur dioxide under para-selectivity enhancing conditions.

4,365,105

OLIGOMERIZING 1-OLEFINS WITH A HETEROGENEOUS CATALYST

Neal E. Morganson, McCandless Township, Allegheny County, and Paul G. Bercik, Penn Township, Westmoreland County, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed December 22, 1981, Ser. No. 333,305
Int. Cl.³ C07C *2/02*
U.S. Cl. 585—525 13 Claims

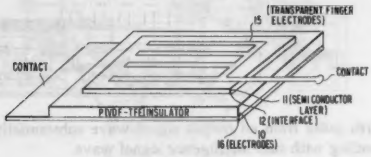
1. The process for oligomerizing a 1-olefin having from three to about 18 carbon atoms and mixtures thereof which comprises contacting said 1-olefin in a reactor with a catalyst comprising a solid adsorbant in particulate form in the presence of boron trifluoride and between about 25 ppm and about one weight percent elemental oxygen based on the 1-olefin at a temperature between about −50° and about 150° C.

4,365,106

EFFICIENT METHOD AND APPARATUS FOR CONVERTING SOLAR ENERGY TO ELECTRICAL ENERGY

Charles F. Pulvari, 2014 Taylor St., NE., Washington, D.C. 20018

Continuation-in-part of Ser. No. 69,477, Aug. 24, 1979, Pat. No. 4,250,384. This application March 4, 1980, Ser. No. 127,171
The portion of the term of this patent subsequent to 1998, has been disclaimed.
Int. Cl.[3] H01J *35/00*
U.S. Cl. 136—206 15 Claims



1. In a method of converting incident solar energy to electrical energy comprising establishing an inversion layer in a semiconductor body by applying a bias potential to a pair of electrodes one of which is insulated from said semiconductor body, subjecting said inversion layer to one part of the incident solar energy radiation spectrum to generate the electron /e/--hole /h/ pairs, and collecting the mobile carriers, the improvement wherein the bias potential applied to said pair of electrodes is generated in situ by conversion of another portion of incident solar radiation spectrum.

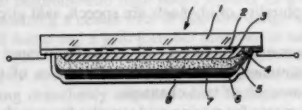
9. Solar to electrical power generator comprising a semiconductor capacitor having a semiconductor body member and at least one pair of electrodes, a solar to electrical energy converter coupled to said semiconductor capacitor in such a way as to constitute a bias voltage source and create an inversion layer in said semiconductor body member such that when said semiconductor body member is irradiated it generates the /e/-/h/ pairs and collects the mobile carriers in said inversion layer and means for extracting the electrical power generated from said pair of electrodes.

4,365,107

AMORPHOUS FILM SOLAR CELL

Yutaka Yamauchi, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed 1981, Ser. No. 235,921
Claims priority, application Japan, 1980, 55-19951
Int. Cl.[3] H01L *31/06*
U.S. Cl. 136—258 2 Claims



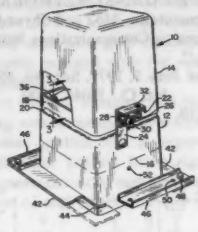
1. An amorphous film solar cell of heterojunction type having a p-i-n construction, comprising a p type or n type amorphous semiconductor layer made of a group III–V material and at least an i (intrinsic) type semiconductor layer made of fluorinated or hydrogenated amorphous silicon semiconductor material.

4,365,108

SECONDARY POWER PEDESTAL FOR ELECTRICAL EQUIPMENT

William L. Bright, 900 Portway Ave., Hood River, Oreg. 97031

Filed July 9, 1981, Ser. No. 281,916
Int. Cl.[3] H05K *5/02*
U.S. Cl. 174—50 5 Claims



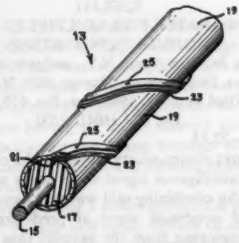
1. A secondary power pedestal comprising
(a) a tubular housing having upper and lower ends and defining walls,
(b) an upper portion of said housing having access means into the interior of said housing,
(c) said housing having a bottom open end and having a lower portion thereof arranged to be buried in the ground for receiving underground electrical equipment,
(d) said wall means of said housing being substantially straight from said bottom open end to an upper portion thereof,
(e) flange means associated with said housing,
(f) horizontal slots in the lower portion of the walls of said housing arranged to receive said flange means in fitted relation,
(g) and fastening means for holding said flange means in said slots facilitating use of said flange means as a ground anchor on said lower portion of said housing.

4,365,109

COAXIAL CABLE DESIGN

James P. O'Loughlin, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 115,513, Jan. 25, 1980, abandoned. This application November 5, 1981, Ser. No. 318,653
Int. Cl.[3] H01B *7/26*
U.S. Cl. 174—109 4 Claims



1. In a coaxial cable having a center conductor, an outer conductive sheath surrounding said center conductor, a dielectric material between said center conductor and said outer sheath, and said outer sheath and said center conductor each having an inductance, the improvement therein comprising means incorporated within said coaxial cable for controlling said inductance of said outer sheath such that said inductance

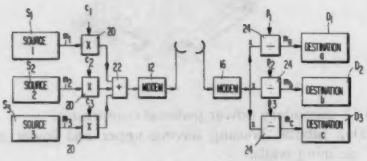
of said outer sheath is substantially equal to the mutual inductance between said outer sheath and said center conductor thereby substantially eliminating transient voltage on said outer sheath when said coaxial cable is pulsed.

4,365,110

MULTIPLE-DESTINATIONAL CRYPTOSYSTEM FOR BROADCAST NETWORKS

Lin-Nan Lee, Germantown, Md., and Shyue-Ching Lu, Taiwan, Taiwan, assignors to Communications Satellite Corporation, Washington, D.C.

Filed June 5, 1979, Ser. No. 45,703
Int. Cl.³ H04L 9/00
U.S. Cl. 178—22.10 **9 Claims**



1. A method of sending a plurality of messages in the form of a single tranmission signal through a single transmitting station to a plurality of destinations through at least one receiving station comprising;

multiplying each of said messages by an enciphering key corresponding to its intended destination;

combining the products of said multiplication step into a cryptogram comprising said single transmission signal, said cryptogram being defined by

$$x=[\Sigma m_i c_i] \bmod P,$$

where P is the product of a plurality of prime numbers p_i, c_i are the enciphering keys corresponding to respective destinations and are defined by $c_i=d_i(d_i^{-1} \bmod p_i)$, d_i is defined by P/p_i, m_i are numbers representing said plurality of messages, $0<m_i<p_i$ and $1 \leqq i \leqq n$;

transmitting said cryptogram to said at least one receiving station; and

dividing the received cryptogram by divisors corresponding to respective destinations to thereby recover the messages intended for each of said destinations.

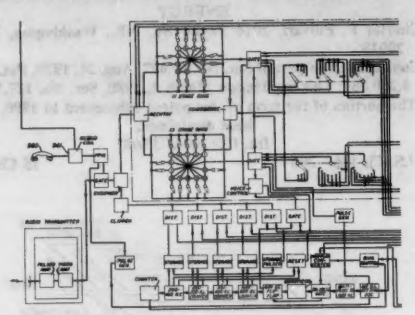
4,365,111

CIPHER APPARATUS FOR MULTIPLEX PULSE CODE MODULATION SYSTEMS

Amos E. Joel, Jr., New York, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 11, 1946, Ser. No. 675,903
Int. Cl.³ H04L 9/00
U.S. Cl. 178—22.13 **23 Claims**

23. In a secret communication system, the combination of: a source of an intelligence signal wave and a source of a noise wave; means for combining said waves; means for periodically sampling said combined wave at predetermined intervals; means for developing from the samples thus obtained a first pulse train comprising sets of marks and spaces; means for randomly developing in accordance with the noise components accompanying said intelligence signal wave a second pulse train of marks and spaces; means for combining said first and second pulse trains to develop a third pulse train; means for transmitting and receiving said third pulse train; means for developing from said third pulse train a fourth pulse train substantially corresponding with said first pulse train, said means including synchronizing means responsive substantially solely to the components of said third pulse train corresponding to said noise wave; and means for developing from said



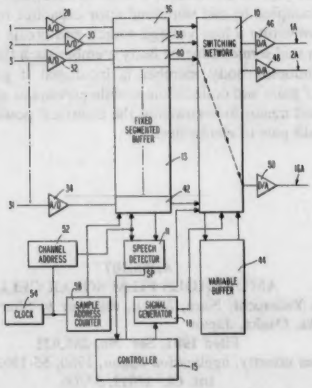
fourth pulse train an output signal wave substantially corresponding with said intelligence signal wave.

4,365,112

SPEECH DETECTOR CIRCUIT FOR A TASI SYSTEM

Peter G. Ruether, and John F. O'Neill, both of Boulder, Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed March 17, 1980, Ser. No. 131,159
Int. Cl.³ H04J 6/02
U.S. Cl. 179—1 SC **9 Claims**



1. A centralized circuit for determining whether input signals from a plurality of channels are speech, said circuit comprising:

a sampling means associated with each of said input channels for continuously providing digital samples of the input signals on each of said channels;

a memory means for storing said samples from each channel, said samples being stored at a first rate;

a means for retrieving said samples on a selected channel at a second rate, greater than said first rate to produce a time compressed input signal for each channel;

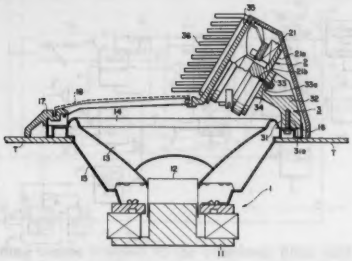
a first means for comparing the power of said time compressed input signal against a selected threshold whereby speech is determined to be present when said threshold is exceeded.

4,365,113

SPEAKER UNIT FOR AUTOMOTIVE VEHICLES

Hiroshi Soma; Makoto Iyobe; Takekazu Iijima, all of Tokyo, and Yutaka Moriyama, Tendo, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed September 12, 1980, Ser. No. 186,788
Claims priority, application Japan, 1980, 55-354[U]
Int. Cl.³ H04R 1/20
U.S. Cl. 179—1 E 9 Claims



5. A speaker unit for an automotive vehicle, comprising:

a low-range speaker having a woofer frame to which an outer peripheral edge of a diaphragm of said low-range speaker is attached, said woofer frame being adapted to be flushly mounted to a rear parcel shelf of said automotive vehicle;

a tweeter holder rigidly mounted upon a rear edge of said woofer frame, said holder being adapted to support a tweeter unit having a tweeter speaker having a central axis directed towards a passenger compartment of said vehicle, said tweeter speaker being positioned in said tweeter holder;

a woofer grill frame detachably coupled around said low-range speaker; and

a low-range grill member supported by said grill frame covering said diaphragm, said holder occupying an area outside an area confined by said low-range grill member.

4,365,114

AUTOMOTIVE LOUDSPEAKER HAVING VARIABLE SPEAKER ORIENTATION AND PARTICULAR ELECTRICAL CONNECTIONS

Hiroshi Soma, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed September 12, 1980, Ser. No. 186,792
Claims priority, application Japan, September 14, 1979, 54/127712[U]; September 14, 1979, 54/127713[U]; September 14, 1979, 54/127714[U]
Int. Cl.³ H04R 1/02, 1/20
U.S. Cl. 179—1 VE 10 Claims

1. A speaker unit for automotive vehicles comprising:

a low-range speaker and a medium- and high-range speaker;

means for changing an angular orientation of a center axis of said medium- and high-range speaker in a vertical plane containing a center axis of said low-range speaker;

a grill frame and a grill member mounted in said grill frame, an open surface of said low-range speaker being at least partly covered with said grill member, said grill frame being detachably engaged with the open surface of said low-range speaker;

a first pair of terminals fixedly mounted upon an outer peripheral portion of a frame member of said low-range speaker;

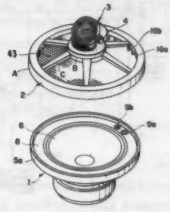
a second pair of terminals rigidly secured to said grill frame, said first and second pairs of terminals being adapted to be connected together when said grill frame is engaged with the open surface of said low-range speaker, said first pair of terminals being coupled to a voice coil bobbin of said low-range speaker and said second pair of terminals being coupled to a voice coil bobbin of said medium- and high-range speaker.

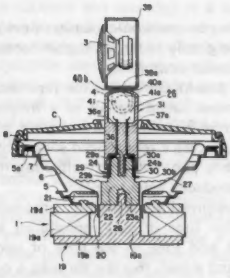
8. A speaker unit for automotive vehicles comprising: a low-range speaker and a medium- and high-range speaker;

means for changing an angular orientation of a center axis of said medium- and high-range speaker in a vertical plane containing a center axis of said low-range speaker;

a grill frame and a grill member mounted in said grill frame, an open surface of said low-range speaker being at least partly covered with said grill member, said grill frame being detachably engaged with the open surface of said low-range speaker;

mounting means for said medium- and high-range speaker, said mounting means comprising a first spacer having a smaller-diameter portion and a larger-diamter portion, said larger-diameter portion being rigidly secured to a pole of a magnetic circuit of said low-range speaker and at least a portion of said larger-diameter portion being surrounded by a voice coil bobbin of said low-range speaker, a damper member having an outer edge coupled to a diaphragm of said low-range speaker and having an inner edge coupled to said larger-diameter portion at the junction with said smaller-diameter portion, said smaller-diameter portion having an upper tapered surface, first and second conductors extending through portions of said smaller-diameter portion and forming contacts upon said upper surface;





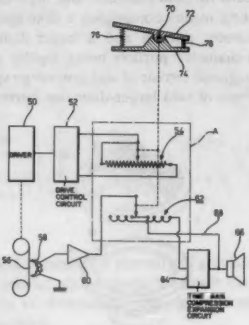
a second spacer having a lower cylindrical portion tapered to fittingly engage said upper surface of said first spacer, third and fourth conductors extending through a portion of said second spacer and forming contacts disposed to mate with said contacts formed by said first and second conductors;

and means for tiltably mounting said medium- and high-range speaker upon an upper portion of said second spacer, a voice coil bobbin of said medium- and high-range speaker being coupled to said third and fourth conductors.

4,365,115
TIME-AXIS COMPRESSION-EXPANSION DEVICES FOR SOUND SIGNALS

Masayuki Nagata, and Shozo Miyazawa, both of Suzaka, Japan, assignors to Kanbayashi Seisakujo Company, Ltd., Naganoken, Japan

Filed April 18, 1980, Ser. No. 141,617
Claims priority, application Japan, April 28, 1979, 54/052738; May 26, 1979, 54/065496; August 1, 1979, 54/106717[U]
Int. Cl.³ G11B *13/00*
U.S. Cl. 179—15.55 T 4 Claims



1. A time-axis compression-expansion device for use in reproducing an originally recorded signal stored in a recording medium, said device comprising:

variable rate transducer means for reproducing said originally recorded sound signals at a frequency pitch and speed different from the pitch and speed used in recording and for producing a reproduced sound signal, said different frequency pitch adversely effecting the intelligibility of said reproduced sound signal;

time-axis compression-expansion processor means for changing the tone of said reproduced sound signal to correspond said tone to the tone of said originally recorded sound signal, thereby forming a converted sound signal including,

delta modulation means for converting said reproduced sound signal into a digital input signal; and

means for modifying said digital input signal to thereby form a converted digital signal; and

digital-to-analog converter means for changing said converted digital signal into an analog converted sound signal; and

means for converting said converted sound signal into an audible output having a frequency content similar to said originally recorded signal but having a speed different from the speed of said originally recorded signal;

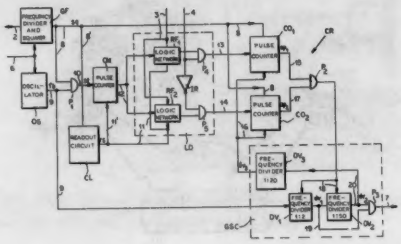
said time-axis compression expansion processor means modifying said digital input signal so as to change the tone of said reproduced signal to correspond to the tone of said originally reproduced signal;

means for presenting said reproduced sound signal from said variable rate transducer means directly to said means for converting by bypassing said time-axis compression-expansion processor means when said speed of reproduction is substantially the same as said speed used in recording.

4,365,116
DIGITAL RINGING-SIGNAL GENERATOR

Franco Pira, and Giovanni Ponte, both of Turin, Italy, assignors to Cselt - Centro Studi e Laboratori Telecomunicazioni S.P.A., Turin, Italy

Filed 1981, Ser. No. 229,174
Claims priority, application Italy, 1980, 67119 A/80
Int. Cl.³ H04M *1/26*
U.S. Cl. 179—84 T 8 Claims



1. In a station of a telecommunication system equipped with an electroacoustic transducer for the emission of audible ringing signals in response to electromechanically and electronically generated call signals incoming over a line, the electromechanically generated call signals being oscillations of relatively high amplitude in a lower audio-frequency range, the electronically generated call signals being oscillations of relatively low amplitude in a higher audio-frequency range,

the combination therewith of a ringing-signal generator responsive to both types of call signal comprising:

input means connected to said line for receiving incoming audio-frequency signals therefrom;

a first circuit branch connected to said input means for emitting a first series of recognition pulses upon detecting incoming signals in said lower audio-frequency range;

a second circuit branch connected in parallel with said first circuit branch to said input means for emitting a second series of recognition pulses upon detecting incoming signals in said higher audio-frequency range;

level-discriminating means connected to said line for disabling said first circuit branch in the absence of incoming signals above a predetermined amplitude threshold and for disabling said second circuit branch in the presence of incoming signals above said amplitude threshold; and

output means connected to said circuit branches for converting either of said series of recognition pulses into an intermittent audio-frequency oscillation fed to said transducer for actuating same.

4,365,117
TELEPHONE HOLD CIRCUIT

William A. Curtis, 10420 Scripps Way, Stanton, Calif. 92640

Filed August 7, 1980, Ser. No. 176,194
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—99 H 12 Claims

1. A hold circuit for use with a telephone, the telephone being connected to central office switching equipment via telephone lines and provided with a hook switch for switching the telephone between an on-hook and an off-hook condition, said hold circuit comprising:

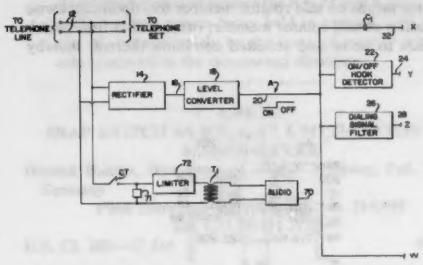
a hold command detecting means for detecting a hold command signal which is generated when a user activates the hook switch so as to momentarily place the telephone in an on-hook condition, said hold command detecting means including:

(i) on/off hook detecting means for detecting when the telephone is in an on-hook and an off-hook condition;

(ii) dialing signal filter means for discriminating between a hold command signal and a dialing signal;

(iii) gating means responsive to said on/off hook detecting means and to said dialing signal filter means for producing a first output signal when either a hold command signal or a telephone hang-up signal is present on the telephone lines;

(iv) discriminating means responsive to said first output signal for discriminating between a hold command signal and a telephone hang-up signal; and



holding means coupled to the telephone lines, said holding means being a means for producing an on-hold condition when a hold command signal is detected by said discriminating means wherein the central office switching equipment is caused to maintain a connection with the telephone.

4,365,118

CONNECTION ARRANGEMENT IN A TELEPHONE INSTRUMENT FOR CONNECTING AN ADDITIONAL SPEECH DEVICE

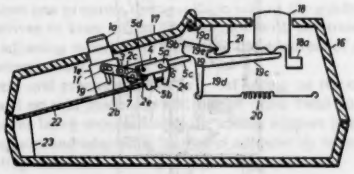
Börje L. Lindman, Tyresö, and Leif Branden, Vasterhaninge, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

PCT No. PCT/SE79/00051, § 371 Date November 10, 1979, § 102(e) Date October 15, 1979, PCT Pub. No. WO79/00824, PCT Pub. Date October 18, 1979

PCT Filed March 9, 1979, Ser. No. 187,841

Int. Cl.³ H04M *1/08*

U.S. Cl. 179—159 **3 Claims**



1. Apparatus for connecting an additional voice circuit to the voice circuits of a telephone instrument having a low speaker device, said apparatus comprising hook switch means movable between an on-hook state and an off-hook state; a cam shaft relay means movable by said hook switch means between a first position wherein the voice circuits of the telephone instrument are in a rest state of the telephone instrument when the hook switch means is in the on-hook state and a second position wherein the voice circuits of the telephone instrument are connected to the low speaker device when the hook switch means is in the off-hook state, said cam shaft relay means being further movable to a third position wherein the voice circuits of the telephone instrument are connected to said additional voice circuit; a control push button means movable between a rest position and an activated position; and a tipping means pivotably mounted between said control push button means and said cam shaft relay means for moving said cam shaft relay means to said third position when said control push button means is moved to the activated position to connect the additional voice circuit to the voice circuits of the telephone instrument independently of the position of the hook switch means.

4,365,119

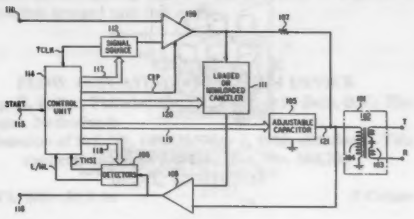
AUTOMATICALLY ADJUSTABLE BIDIRECTIONAL-TO-UNIDIRECTIONAL TRANSMISSION NETWORK

Li-Jin W. Chung, Burlington, N.C.; Ernest P. Moore, Berkeley Heights, N.J.; Glendon R. Porter, Denville, N.J., and Joseph F. Rizzo, Lodi, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 28, 1980, Ser. No. 173,014

Int. Cl.³ H04B *3/20*

U.S. Cl. 179—170.2 **10 Claims**



1. A transmission network adapted to couple a unidirectional receive path and a unidirectional transmit path to a bidirectional path including a 2-wire nonloaded type cable comprising:

a canceler including means for generating a correction signal which is substantially a replica of an error signal developed in the network and included as a component of a transmit signal supplied to the transmit path, said correction signal generating means including a plurality of controllably adjustable impedance elements;

controllable signal generating means for supplying predetermined test signals to the receive path;

signal detection means for detecting signal amplitudes on the transmit path;

means for algebraically combining said correction signal with the transmit signal;

control means for generating control signals to controllably adjust said plurality of impedance elements in said correction signal generating means in at least a first procedure including a first prescribed adjustment sequence, each of said impedance elements being adjusted in said first adjustment sequence while supplying a corresponding one of said test signals to the receive path to obtain an amplitude null in the transmission path as detected by said detection means, said first adjustment sequence including multiple iterative adjustment of predetermined ones of said impedance elements for automatically converging said correction signal generation means to have an optimum transfer function which substantially matches the impedance developed in the network when the bidirectional path is connected thereto so that said correction signal is substantially a replica of the error signal,

said first adjustment sequence including iterative adjustment of predetermined ones of said impedance elements in predetermined groups and multiple iterative adjustment of said groups of impedance elements until no change in the impedance adjustments occur, and

said first procedure including a determination of whether a first frequency associated with a predetermined first one of said adjustable impedance elements at which a corresponding first pole or first zero occur is equal to or greater than a second frequency associated with a predetermined second one of said adjustable impedance elements at

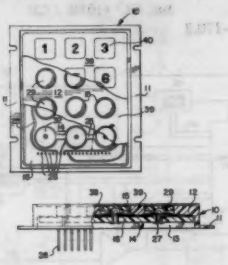
which a corresponding second pole or second zero occur, and said control means generating control signals to constrain impedance settings of said first and second impedance elements so that the first frequency does not substantially exceed said second frequency.

4,365,120

ILLUMINATED KEYBOARD

Walter R. Pounds, Lafayette, Colo., assignor to KB Denver, Inc., Frederick, Colo.

Filed April 13, 1981, Ser. No. 253,814
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A **6 Claims**



6. An illuminated keyboard assembly having a plurality of key-operated switches which comprises, a frame having a plurality of openings each of which slidably receives a key actuator of translucent material so that it can function as a light diffuser and means coacting with the key actuators to maintain said actuators in working relationship with the frame, and a printed circuit board and switch subassembly received by said frame, said subassembly including a printed circuit board and a plurality of switches one each being in registry with a key actuator, each said switch having electrically insulated conductive paths on said printed circuit board and domes of electrically conductive material coacting with the conductive paths to selectively electrically connect the conductive paths upon tripping of the dome by movement of the key actuator aligned therewith, said subassembly further including a light generating lamp secured to the printed circuit board and extending upwardly from the conductive paths, said dome having an opening therethrough and said actuator having a recess aligned with said opening such that when the dome is tripped the light generating lamp will project through the dome and into the recess of the actuator such that the light will diffuse throughout the actuator.

4,365,121

TURN DIRECTION DETECTOR FOR A STEERING SHAFT

Masayuki Morita, Tokoname; Kazuhisa Kubota, Ichinomiya, and Tasuku Nakano, Mizunami, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed December 2, 1980, Ser. No. 212,226
Claims priority, application Japan, December 7, 1979, 54-168656[U]; 1980, 55-12809[U]
Int. Cl.³ H01H *3/16, 9/00;* H01J *40/14*
U.S. Cl. 200—61.27 **19 Claims**

1. A turn direction detector for detecting the direction of turning of a steering shaft of an automobile, said detector comprising:

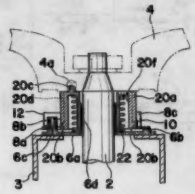
a support member adapted to be fixedly connected to a housing of the steering shaft, said support member having an opening for rotatably receiving therethrough the steering shaft;

a rotator member adapted to be fixedly connected to the steering shaft to be rotatable therewith and to be rotatable with respect to said support member;

first switch means supported by said support member and capable of being in an actuated condition and a nonactuated condition;

second switch means supported by said support member and capable of being in an actuated condition and a nonactuated condition;

actuator means on said rotator member for, upon clockwise rotation of said rotator member, causing said first switch means to be in said actuated condition thereof, thereby



providing a detection of clockwise turning of the steering shaft, and for, upon counterclockwise rotation of said rotator member, causing said second switch means to be in said actuated condition thereof, thereby providing a detection of counterclockwise turning of the steering shaft; and

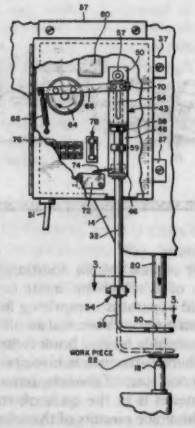
means, operable by said rotator member, for, upon said clockwise rotation of said rotator member, maintaining said second switch means in said nonactuated condition thereof, and for, upon said counterclockwise rotation of said rotator member, maintaining said first switch means in said nonactuated condition thereof.

4,365,122

MACHINE CONTROL DEVICE

Russell C. Walton, 106 Center Ave., Libertyville, Ill. 60048

Filed June 1, 1979, Ser. No. 44,651
Int. Cl.³ H01H *3/16;* F16D *9/00*
U.S. Cl. 200—61.42 **13 Claims**



1. A machine control device comprising:

a movable support rod;

a sensor coupled to said movable support rod, said sensor and rod being movable by the force of gravity;

a plate having means attached thereto for slidably retaining said support rod;

a limit switch coupled to said plate;

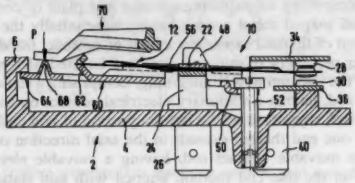
means coupled to said rod for closing said limit switch;
means extending from said rod;
a movable arm having one end positioned in contact with and beneath said extending means;
means coupled to said plate and to said arm for biasing said arm in an upper position; and
rotary solenoid means coupled to said plate and to said arm for moving said arm beneath the extending means in a downward direction against the b as of said biasing means, said extending means being held in contact with the one end of said arm solely by the force of gravity when said arm is moved in the downward direction.

4,365,123

SNAP SWITCH AS WELL AS A METHOD FOR ITS MANUFACTURE

Helmut Baader, Birkenweg 6, D-8470 Nabburg, Fed. Rep. of Germany

Filed December 10, 1980, Ser. No. 214,949
Int. Cl.³ H01H *21/04*
U.S. Cl. 200—67 DA **4 Claims**



1. A snap switch comprising
a snap spring, which is fastened on a spring support and bears at least one switching contact spaced therefrom,
at least one contact stationary with respect to the spring support, on which the switching contact lies in the switching position of the snap spring,
a guide rod, which is pivotally mounted near the spring support and is connected with said snap spring at a distance from said spring support as well as from the switching contact, and exhibits a point of application for an actuating force,
at least one prestress spring, which acts on the guide rod and strives to keep this in stop position with prestress,
an adjusting member for adjusting the prestress of said prestress spring
wherein said prestress spring is a leaf spring on the one hand fastened on said guide rod and on the other hand on a lever, said lever being mounted near the spring support in a stationary support and adapted to be swivel adjusted by means of said adjusting member.

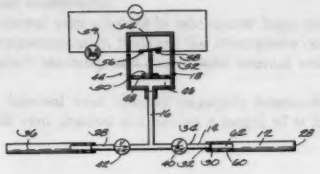
4,365,124

PRESSURE SENSITIVE MACHINE SAFETY SWITCH

Charles E. Robinson, 208 Gardner Ave., Burlington, Wis. 53105

Filed November 10, 1980, Ser. No. 205,487
Int. Cl.³ H01H *35/34*
U.S. Cl. 200—81.5 **5 Claims**

1. In a fluid operated pressure sensitive safety switch for a machine comprising:
A. sensor means with a first fluid filled interior cavity having a pressure sensitive wall which can be displaced by a slight pressure to reduce the volume of said first cavity;
B. switch actuating means with a second fluid filled interior cavity having as one wall a pressure sensitive diaphragm which is displaced outward by an influx of fluid into said second cavity;
C. fluid filled conduit means connecting said first cavity to said second cavity; and
D. disabling electrical switch means to disable said machine responsive to outward displacement of said diaphragm;
the improvement wherein said safety switch further comprises:



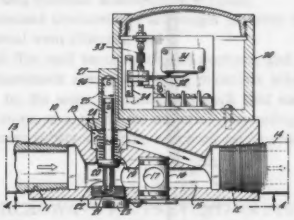
E. check valve means in said conduit means allowing fluid to freely flow through said conduit toward said second cavity while restricting the flow of said fluid through said conduit toward said first cavity.

4,365,125

FLOW ACTUATING SWITCHING DEVICE

George D. Keller, Philadelphia, Pa., assignor to Beta, B.V., The Hague, Netherlands

Continuation of Ser. No. 146,139, May 2, 1980, abandoned. This application March 22, 1982, Ser. No. 360,203
Int. Cl.³ H01H *35/38*
U.S. Cl. 200—81.9 M **5 Claims**



1. A fluid actuated system for actuation of a switch, said system being responsive to flow of a fluid in a passageway, and comprising a housing through which said passageway extends, said passageway including inlet and outlet openings in opposed ends of said housing, said passageway including a portion which is substantially perpendicular to said inlet and outlet openings, a fluid actuated member mounted for movement along the perpendicularly extended portion of said passageway in response to fluid flow, a first elongated permanent magnet element moveable with said fluid actuated member, said permanent magnet element having poles displaced along the longitudinal axis thereof and being moveable by said fluid actuated member along said axis from a first position in the absence of fluid flow to a second position in response to a predetermined fluid flow, a second elongated permanent magnet element having poles displaced along the longitudinal axis thereof, means mounting the second elongated permanent element for movement along said second named longitudinal axis adjacent said first magnet element, said mounting means for the second magnet element limiting the movement of said second magnet element to a direction extending at least primarily along its longitudinal axis, the longitudinal axes of said first and second magnet elements being substantially parallel to each other, said magnet elements being polarized so that in a first position of the first element an end of one polarity on the first element is adjacent an end of the same polarity on the second element whereby the forces of magnetic repulsion bias the second element to one switch actuating position and in a second position of the first element the end of one polarity on the first element is intermediate the ends of the second element

whereby the forces of magnetic attraction and repulsion bias the second element to a second switch actuating position.

4,365,126

GAS CIRCUIT BREAKER

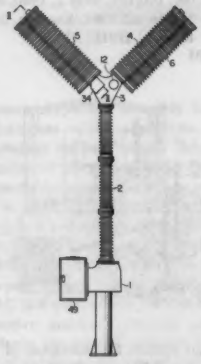
Masabumi Oshima; Haruo Honda, both of Hitachi, and Takeshi Takahashi, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed November 27, 1979, Ser. No. 97,696

Claims priority, application Japan, December 1, 1978, 53-147940

Int. Cl.³ H01H *33/28*

U.S. Cl. 200—144 AP 7 Claims



1. A gas circuit breaker comprising:

a swingable lever means for forming a portion of an operation force transmitting mechanism;

a mechanism housing means for housing the swingable lever means;

a center shaft means for supporting said lever means in said mechanism housing means;

a main interrupting unit supported by said mechanism housing means, the main interrupting unit including a moving contact connected to one end of said swingable lever means;

an operation means for exerting an operating force on said lever means so as to enable the lever means to open and close the main interrupting unit;

hollow bearing means for slidably supporting at least one end of the center shaft means, said hollow bearing means being securely engaged in an aperture provided in said mechanism housing means, said center shaft means being positioned in a hollow space of said hollow bearing means and having an engaging means at said one end for enabling an engagement with a force transmitting member; and

a gas filled in said mechanism housing means and said main interrupting unit for enabling an extinction of an arc in the circuit breaker; and

at least one end lid means removably attached to said hollow bearing means for sealing at least one end of said hollow space of said hollow bearing means.

4,365,127

VACUUM POWER INTERRUPTER

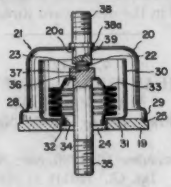
Shinzo Sakuma, Yokohama, and Junichi Warabi, Shimizu, both of Japan, assignors to Kabushiki Kaishi Meidensha and Kabushiki Kaisha GemVac, both of Tokyo, Japan

Filed November 20, 1980, Ser. No. 208,686

Claims priority, application Japan, November 26, 1979, 54-152582

Int. Cl.³ H01N *33/66*

U.S. Cl. 200—144 B 9 Claims



1. A vacuum power interrupter constituted by a vacuum vessel comprising an insulating circular end plate of ceramic, and a bell shaped metal casing, having substantially the same coefficient of thermal expansion as that of ceramic, fitted over the outer periphery of said end plate and hermetically brazed thereto, the vacuum power interrupter comprising a stationary contact rod, having a stationary electrical contact on the one end thereof, supported by the bottom portion of said casing so that the one end thereof extends in the axial direction of said casing, a movable contact rod, having a movable electrical contact on the one end thereof, aligned with said stationary contact rod so that it is movable relative to said stationary contact rod, and a cylindrical arc-shield member disposed within the vacuum vessel so as to surround stationary and movable electrical contacts.

4,365,128

HIGH-VOLTAGE CIRCUIT BREAKER

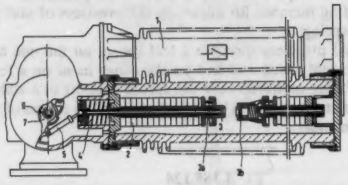
Karl Mascher, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed December 2, 1980, Ser. No. 212,218

Claims priority, application Fed. Rep. of Germany, December 7, 1979, 2949753

Int. Cl.³ H01H *33/28*

U.S. Cl. 200—148 F 5 Claims



1. In a high-voltage circuit breaker including a closing resistor which, during a closing operation of the breaker, is connected in parallel relationship with a main switching gap of the breaker by means of an auxiliary switching gap which closes before said main switching gap closes, and which is disconnected after said auxiliary switching gap closes by opening said auxiliary switching gap before said main switching gap opens, said auxiliary gap being open until said main switching gap is closed again; a movable, spring-loaded contact pin biased in the opening direction of said auxiliary switching gap; and a connecting rod coupled at one end to said auxiliary contact pin and at the other end to a rotatable crank drive of a drive unit of the circuit breaker, said crank drive being mounted on a rotating shaft; the improvement comprising said crank drive

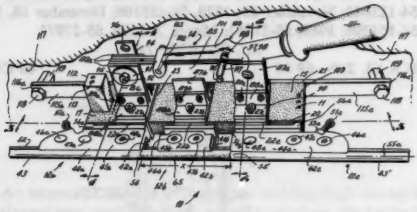
including a gate aperture for forcibly guiding said other end of said connecting rod, said gate aperture comprising a first curved portion which is concentric with said rotating shaft on which said crank drive is mounted, and a linear portion disposed at one end of said curved portion located along the direction of rotation of said crank drive during said closing operation of said breaker, said linear portion being further disposed approximately radially outwardly with respect to said rotating shaft of said crank drive.

4,365,129

MODULAR SECTION INSULATOR SWITCH

Kimball K. McKee, Covington, Ky., assignor to The Elreco Corporation, Cincinnati, Ohio

Filed December 8, 1980, Ser. No. 214,117
Int. Cl.³ H01H *21/54*
U.S. Cl. 200—162 **12 Claims**



1. A trolley wire section insulator switch, said switch comprising

a base,

left hand, center and right hand trolley runners connected to said base, said center runner being spaced from both said left and right hand trolley runners, each of said left and right hand trolley runners comprising jaws adapted to receive an electrically conductive trolley wire in mounted relation therewith, and

an electrically non-conductive trolley wire section mounted in said center trolley runner, said electrically non-conductive wire section serving as a support for a vehicle's trolley to ride against as said vehicle's trolley traverses said switch from said left hand trolley runner to said right hand trolley runner, and said electrically non-conductive trolley wire section being of a length sufficient to substantially span the gap between the respective inner ends of said left and right hand trolley runners, thereby providing an electrically non-conductive support for a vehicle's trolley across said gap for minimizing arcing between said switch and said trolley as said trolley traverses said switch.

4,365,130

VENTED MEMBRANE SWITCH WITH CONTAMINANT SCAVENGER

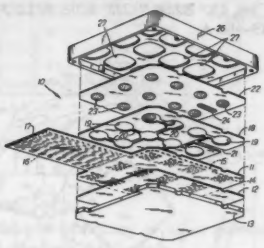
David A. Christensen, Crystal Lake, Ill., assignor to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 81,837, Oct. 4, 1979, abandoned. This application December 28, 1981, Ser. No. 334,495
Int. Cl.³ H01H *13/52, 9/02*
U.S. Cl. 200—306 **5 Claims**

1. In a membrane switch assembly of the type including an insulating substrate having attached to its inner surface first conductive contact portions of a plurality of switches; an insulating spacer layer overlying and secured to said substrate and having a plurality of apertures therein, each providing open access to the first conductive contact portion of one of said switches, and said spacer layer including a network of internal vent channels interconnecting and providing open communication between said apertures; and, a flexible membrane overlying and secured to said spacer layer and having attached to its inner surface second conductive contact portions of said switches, each of said second conductive contact portions being disposed in alignment with one of said apertures and first conductive contact portions and spaced from the latter such that each of said switches is normally open; the improvement comprising:

(a) an external vent channel in said spacer layer providing open communication between the atmosphere outside of the switch assembly and one of said internal vent channels;

(b) said external vent channel angularly intersecting said internal vent channel and having a length of at least one inch;



(c) said external vent channel being dimensioned to achieve pressure equilization between said internal vent channels and said external atmospheric pressure;

(d) a contact contaminant scavenger material disposed said external vent channel; and

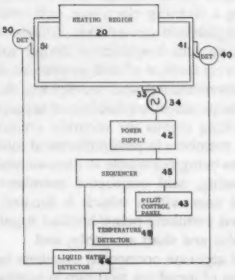
(e) said first and second contact portions and said contact contaminants scavenger being materials which are reactant to the same contaminants such that said scavenger functions as a sacrifical material preventing undesirable reactant substances from reaching said contact portions.

4,365,131

MICROWAVE ICE PREVENTION SYSTEM

Robert J. Hansman, Jr., 1 Common La., Scituate, Mass. 02066

Filed June 27, 1980, Ser. No. 163,520
Int. Cl.³ H05B *6/64*
U.S. Cl. 219—10.55 M **3 Claims**



1. A method for the prevention of ice formation on exposed structures, comprising the steps of:

generating microwave electromagnetic energy at a frequency such that said energy is strongly absorbed by liquid water and weakly absorbed by said structure or by frozen water;

transmitting and distributing the microwave energy to a heating region in front of the structure to be protected; and

heating any incident supercooled water droplets to above

freezing by the absorption of microwave electromagnetic energy before impacting the structure and thus preventing icing.

4,365,132

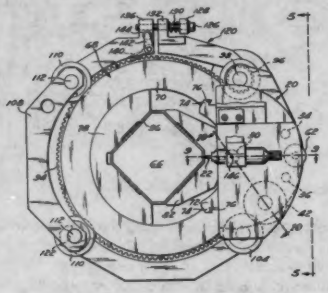
WELDING APPARATUS FOR POLYGONAL CROSS-SECTIONED TUBING

Gasparas Kazlauskas, 4455 Los Feliz, Apt. 1108, Los Angeles, Calif. 90027; Vytautas J. Jusionis, 5302 Clark Cir., Westminster, Calif. 92683; Max M. Westerberg, 4658 Brewster Dr., Tarzana, Calif. 91356, and John W. Meacham, 2028 Las Lunas St., Pasadena, Calif. 91107

Filed October 2, 1978, Ser. No. 947,357

Int. Cl.³ B23K *9/225, 9/02, 9/12, 37/02*

U.S. Cl. 219—60 A **6 Claims**



1. The welding apparatus for producing a weld on a workpiece, said welding apparatus comprising:

a housing having an internal opening, said workpiece to be located in said internal opening, said workpiece being tubular, said workpiece having a polygonal cross-sectional configuration;

a welding electrode assembly mounted by mounting means on said housing, said welding electrode assembly being movable on said housing around said internal opening, said mounting means comprises:

a driving assembly movably mounted on said housing, said welding electrode assembly being pivotally mounted on said driving assembly, said driving assembly to move said welding electrode assembly about the workpiece, said workpiece having an exterior surface, said welding electrode assembly including a welding electrode, said welding electrode having a longitudinal center axis, control means continuously maintaining said longitudinal center axis perpendicular to said external surface of said workpiece as said welding electrode moves around said workpiece, said driving assembly being composed of a plurality of separate connected members, locking means for securely connecting together said separate members in position around said housing, said locking means being releasable to disassociate said members from said housing, said connected members forming a totally enclosed area within which is located said housing, said connected members being hooked together through an engaging slot and shaft assembly; and

one of said separate connected members being formed of two in number of members, said two in number of members being connected together by a third member, one of said two in number of members being slidable on said third member toward and away from the other of said two in number of members, a biasing means located about said third member exerting a continuous bias upon said two in number of members tending to locate said two in number of members as close together as possible, a pivotable cam mounted on one of said two in number of members, said pivotal cam to be pivoted pushing against the other of said two in number of members causing said two in number of members to move apart against the bias of said biasing means thereby permitting disassociation of said separate connected members from said housing.

4,365,133

METHOD OF AND APPARATUS FOR ELECTROEROSIVELY MACHINING A 3D CAVITY IN A WORKPIECE

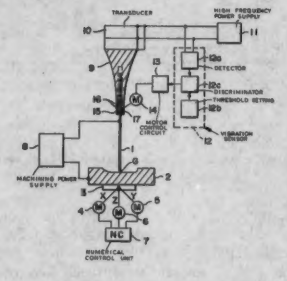
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed September 25, 1980, Ser. No. 190,757

Claims priority, application Japan, September 26, 1979, 54-124651; September 28, 1979, 54-124152; September 29, 1979, 54-125842; November 29, 1979, 54-155108; December 18, 1979, 54-164205; 1980, 55-17563; March 7, 1980, 55-27971

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 M **40 Claims**



1. A method of machining a cavity in a workpiece by electroerosion with a slender tool electrode having a machining surface contour which is of a configuration generally independent of the shape of the desired cavity, comprising the steps of:

axially juxtaposing said slender tool electrode with the workpiece to position said machining surface contour in a spaced juxtaposition therewith across a machining gap flooded with a machining liquid;

imparting high-frequency vibrations to said slender tool electrode to vibrationally fluctuate said machining surface contour and to dynamically enlarge the effective machining area thereof by a small size determined by the amplitude of said high-frequency vibrations;

applying a succession of electrical pulses between said vibrating slender tool electrode and the workpiece through the machining gap to effect localized electrical discharges jumping between the workpiece and said machining surface contour brought proximal thereto by vibrational fluctuations, thereby electroerosively removing material from the workpiece against said vibrationally fluctuating machining surface contour with the enlarged effective machining area; and

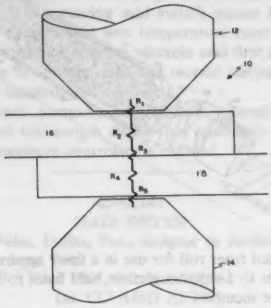
multi-axially displacing said vibrating slender tool electrode relatively over said workpiece along three coordinate axes including a pair of coordinate axes defining a plane substantially orthogonal to the longitudinal axis of said slender tool electrode and a coordinate axis substantially orthogonal to said plane while maintaining the average width of said machining gap substantially constant, thereby three-dimensionally machining said workpiece at least in part by said electrical discharges with said vibrationally fluctuating machining surface contour to form the desired cavity in the workpiece.

4,365,134

METHOD OF RESISTANCE WELDING

Thomas W. Eagar, Belmont, Mass.; Joseph G. Kaiser, Wallingford, Conn., and Gregory J. Dunn, Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed December 31, 1980, Ser. No. 221,591
Int. Cl.³ B23K *11/16, 11/34*
U.S. Cl. 219—118 4 Claims



1. An improved method of resistance welding high strength low alloyed steel materials along a faying interface, the method comprising:

(a) measuring the bulk resistance of said materials;

(b) determining the optimal surface resistance for said materials so that when said materials are welded sufficient heat is generated at the faying interface while bulk heating of materials is minimized;

(c) treating the surface of said materials to produce a coating which increases the surface resistance to obtain said optimal surface resistance and

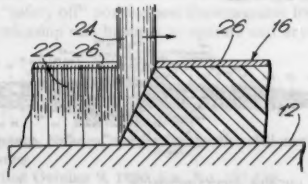
(d) resistance welding said treated materials.

4,365,135

SHAPING OF THERMAL INSULATION MATERIAL

Joseph A. McWilliams, Droitwich, England, assignor to Micropore International Ltd., England

Filed December 10, 1980, Ser. No. 215,092
Claims priority, application United Kingdom, December 14, 1979, 7943116
Int. Cl.³ B23K *26/00*
U.S. Cl. 219—121 LF 8 Claims



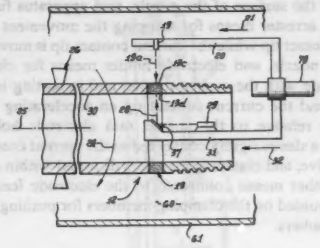
1. A method of shaping a block of microporous thermal insulation material comprising silica-aerogel particles while simultaneously forming a protective skin on said material, said method comprising cutting the desired shape from a workpiece using a laser beam, wherein the laser beam is directed at the workpiece so as to cut the workpiece and simultaneously to generate intense heat sufficient to fuse the silica-aerogel particles at the surface of the cut edge, thereby forming a thin, substantially continuous protective skin at the cut edge of the shaped block.

4,365,136

ZONE REFINEMENT OF INERTIA WELDED TUBULARS TO IMPART IMPROVED CORROSION RESISTANCE

Theodore Gottlieb, Glendale, Calif., assignor to Hydril Company, Los Angeles, Calif.

Filed 1981, Ser. No. 237,296
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LE 20 Claims



1. In the method of fabricating an oil or gas well metallic tubular product, the steps that include,

(a) providing a steel tube and a pre-fabricated thread end and welding said thread end to the tube to form a weld,

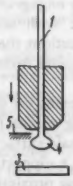
(b) directing a laser beam at the surface of said weld to cause the beam to progressively and locally vaporize a thin film of the weld metal, and allowing the metal vapor to condense back onto the weld, thereby to form a corrosion resistant surface.

4,365,137

APPARATUS FOR ELECTRIC-ARC GAS-SHIELDED SURFACING BY DROPLETS WITH CONSUMABLE ELECTRODE

Nikolai M. Tarasov, ulitsa Chkalova, 7, kv. 30; Nikolai A. Varukha, ulitsa Kamenets-Podolskaya, 28, both of Kharkov; Rostislav L. Brontman, ulitsa Vutechicha, 5, kv. 92, Moscow; Boris A. Slesarev, pereulok Pletnevsky, 3, kv. 9, Kharkov; Anatoly M. Zhukov, ulitsa Geroev Truda, 38, kv. 223, Kharkov; Valery V. Mizik, pereulok Uritskogo, 2, kv. 9, Kharkov; Evgeny P. Rogachev, ulitsa Akademika Proskury, 5, kv. 26, Kharkov, and Nikolai I. Gurnov, ulitsa Geroev Truda, 4, kv. 8, Kharkov, all of U.S.S.R.

PCT No. PCT/SU79/00079, § 371 Date October 28, 1980, § 102(e) Date October 28, 1980, PCT Pub. No. WO80/01772, PCT Pub. Date September 4, 1980
PCT Filed August 30, 1979, Ser. No. 201,395
Claims priority, application U.S.S.R., 1979, 2725299; 1979, 2725300
Int. Cl.³ B23K *9/04*
U.S. Cl. 219—137.31 12 Claims



1. An apparatus for electric-arc gas-shielded surfacing of an article by droplets with a consumable electrode having an electrode melting zone, comprising feeding means for feeding said consumable electrode to a surface of the article being

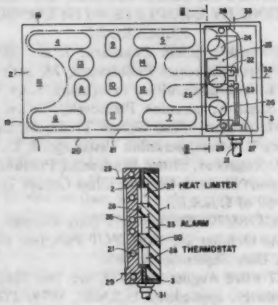
surfaced, and a body wherein there are mounted a nozzle having a cavity provided with an inlet pipe for supplying a shielding gas into the cavity of said nozzle, and having an opening adapted for directing said shielding gas into the electrode melting zone, a current contact tip introduced into said nozzle and provided with an aperture for the electrode to pass through, and drive means for translatory moving the current contact tip with acceleration relative to the nozzle in the direction of the surface of the article, said apparatus further comprising arrester means for stopping the movement of the current contact tip while the current contact tip is moving relative to the nozzle, and electrode holder means for clamping the electrode with the molten droplet and imparting to said electrode and the current contact tip an accelerating translatory motion relative to the nozzle, said electrode holder means having a sleeve rigidly connected to the current contact tip and said drive, and clamping members disposed within said sleeve, and pusher means connected to the electrode feeding means and mounted on the clamping members for pushing the clamping members.

4,365,138

HEATED INSTRUMENT-MOUNTING PLATE

Joachim Hess, Schröplerstrasse 37, 8070 Ingolstadt, Fed. Rep. of Germany

Continuation of Ser. No. 937,815, Aug. 29, 1978, abandoned.
This application August 21, 1980, Ser. No. 179,979
Claims priority, application Fed. Rep. of Germany, August 31, 1977, 2739123
Int. Cl.[3] H05B *1/03*
U.S. Cl. 219—200 **6 Claims**



1. A device for mounting an instrument under thermally stabilized conditions on a support, comprising:

a perforated plate of good thermal conductivity with parallel surfaces respectively engageable by an instrument and by a support connectable with said plate by fastening means traversing the perforations thereof;

heating means in said plate forming a loop between said surfaces;

temperature-sensing means on one of said surfaces disposed close to said heating means for controlling the operation thereof, said one of said surfaces being recessed adjacent an edge thereof to form a supporting base for said temperature-sensing means in close proximity to said heating means; and

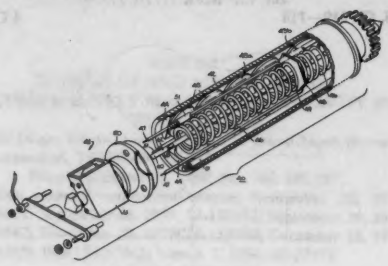
a housing secured to said plate, said temperature-sensing means being enclosed in said housing, the other of said surfaces being recessed opposite said base to provide an air space between a part of said plate forming said base and a support contacting said other of said surfaces in the vicinity of said housing.

4,365,139

HEATED FUSER ROLL

Hugh S. L. Dannatt, Bethel, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed October 9, 1981, Ser. No. 309,869
Int. Cl.[3] G03G *5/00*; H05B *1/02*
U.S. Cl. 219—216 **3 Claims**



1. A heated fuser roll for use in a fuser apparatus for fixing toner images to a support surface, said fuser roll comprising:

a. a sleeve member;

b. two electrically connected heating units positioned within said sleeve member, each heating unit including a plurality of heating elements formed of a semiconducting ceramic material having a positive temperature coefficient of resistivity and exhibiting a Curie temperature transition point at which the resistance of said material increases with increasing temperature;

c. an insulating member positioned between said heating units for separating each of the units; and

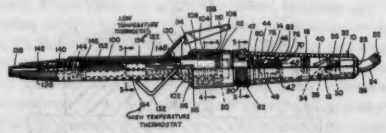
d. thermally sensitive switching means to control power to said heating elements when starting said fuser from a cold state, the switching means adapted to electrically connect the heating units in series when power is first applied to said fuser and then electrically connect said units in parallel when said heating elements are heated to said Curie temperature.

4,365,140

THERMOSTATICALLY CONTROLLED DUAL TEMPERATURE ELECTRIC HAIR CURLING IRON

Eleanor A. Bast, West Chicago; Jean-Pierre DuBois, Lombard, and Robert T. MacLagen, Park Forest, all of, IL, assignors to Sunbeam Corporation, Chicago, Ill.

Filed July 14, 1980, Ser. No. 167,867
Int. Cl.[3] H05B *1/02*; A45D *1/04*
U.S. Cl. 219—225 **4 Claims**



1. A curling iron comprising

means for connection to a source of electric power,

a handle,

a barrel connected to said handle,

a heater disposed in good heat transfer relation to said barrel,

a first temperature controller connected in circuit with said heater and said connection means and disposed in good heat transfer relation to said barrel for controlling a flow of electric power from said connection means to said heater to regulate the temperature of said barrel to a first predetermined temperature,

a second temperature controller connected in circuit with said heater and said connection means and disposed in

good heat transfer relation to said barrel for controlling a flow of electric power from said connection means to said heater to regulate the temperature of said barrel to a second predetermined temperature, which is substantially higher than said first predetermined temperature,

switch means for disabling said first temperature controller and enabling said second temperature controller to effect a change in the temperature of said barrel, said switch means including a manually operable means mounted on said handle for moving said switch means from a first position wherein said first temperature controller is enabled to a second position wherein said first temperature controller is disabled and said second temperature controller is enabled, and

biasing means normally urging said manually operable means and said switch means to a position in which said first temperature controller is enabled.

4,365,141

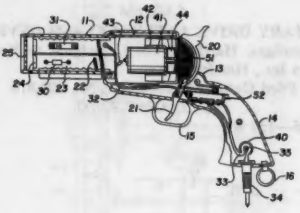
HAIR DRYER

Richard V. Weiss, Dallas, Tex., assignor to Jerdon Industries, Inc., Richardson, Tex.

Filed 1981, Ser. No. 222,555

Int. Cl.³ A45D *20/10*

U.S. Cl. 219—370 **10 Claims**



1. A hair dryer in the form of a hand gun comprising: a hand-gun shaped housing having a barrel provided with an open discharge end; an electrical heater in said housing; an electric motor in said housing; a fan connected with said motor to blow air through said barrel along said heater discharging said air from the open end of said barrel; an electrical switch connected with said heater and said motor; an electrical supply cord connected with said switch; a hammer connected with said switch for operating said switch between "off" position and a plurality of different dryer operating conditions; and a trigger operable with said hammer for releasably holding said hammer at a "safety off" position and disengageable from said hammer for releasing said hammer to operate said dryer.

4,365,142

ELECTRICAL UNIT FOR STOVES, FIREPLACES AND LIKE DEVICES

Arne Alin, Spanga, Sweden, assignor to Luftkonditionering AB, Trosa, Sweden

Filed October 9, 1980, Ser. No. 195,438

Claims priority, application Sweden, October 18, 1979, 7908663

Int. Cl.³ F24H *3/04*

U.S. Cl. 219—374 **11 Claims**

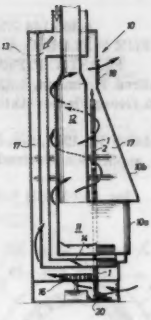
1. In a solid fuel stove, fireplace or like device having a combustion system, and a warm-air circulation system arranged separately from said combustion system, said warm-air circulation system including a fan means for circulation of air to be heated,

the improvement in accordance with the invention of an electrical heating unit comprising:

at least one electrical heating element;

current-supply cables connected to said at least one electrical heating element;

an open-ended, hollow conduit-pipe element which protectively encloses said current-supply cables and which carries said at least one electrical heating element, said conduit-pipe element having upper and lower open ends; and



mounting means for so positioning said conduit-pipe element in the flow path of the hot air in said stove, fireplace or like device that cooling air for cooling said supply cables flows into the lower open end of said conduit-pipe element, as a result of induced convection as a result of action of said fan means, and departs at the upper open end of said conduit-pipe element, where it is mixed with heated air in said warm-air circulation system of said stove, fireplace or like device.

4,365,143

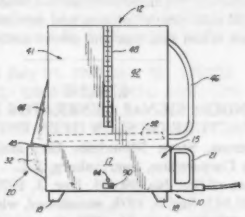
ASSEMBLY FOR PREPARING AND DISPENSING INFANTILE DIETARY FORMULATION

William X. Kerber, Jr., Rte. 3, Box 50-A, Tuttle, Okla. 73089

Filed December 22, 1980, Ser. No. 219,031

Int. Cl.³ F27D *11/00*

U.S. Cl. 219—401 **15 Claims**



1. An apparatus for preparing and for dispensing infant formula comprising:

a steam basin subassembly including:

a reservoir for formula water containment;

heating means in said reservoir;

handle means for pouring hot, uncontaminated formula water out of said reservoir into a container means; and

pouring means for cooperating with said handle means in the pouring of heated formula water out of said reservoir into a container means;

container means having an open top and inverted over, and supported on, said steam basin subassembly and suitable for mixing formula therein;

sterilizing rack means removably positioned at least partially within said container means and over said steam basin subassembly;

lip means on said container means for directing condensed steam from said container means downwardly toward said steam basin subassembly and for pouring liquid from said container means during formula preparation; and

trap means on said water reservoir for receiving steam from said steam directing means and for condensing the received steam at a location isolated from the water in the water reservoir.

4,365,144

APPARATUS FOR WELDING A JOINT BETWEEN PLASTIC PIPES

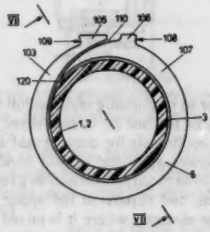
Fritz Reich, and Alfred Thalmann, both of Uhwiesen, Switzerland, assignors to Georg Fischer Aktiengesellschaft, Switzerland

Filed March 10, 1981, Ser. No. 242,301

Claims priority, application Switzerland, March 10, 1980, 1850/80

Int. Cl.³ H05B *3/58*

U.S. Cl. 219—535 **5 Claims**



1. An improved apparatus for welding together the abutting ends of two coaxially aligned plastic pipes, the apparatus being of the type including a heating mat having heating wire therein, said mat being wrappable around the pipes so as to encircle the abutment thereof with the ends of the mat substantially meeting at one side of the pipes, and a generally cylindrical, C-shaped sleeve of plastic material placeable around the mat with the ends thereof defining a slit, the sleeve being subjectable to clamping force in the direction of reduction of its circumference, the improvement wherein

said mat and said sleeve include end portions which overlap each other when said mat and sleeve encircle said pipes.

4,365,145

RANDOM SIGNAL GENERATOR FOR THE MANUFACTURE OF SLUB OPEN END SPUN YARN

Zane Frentress, Stone Mountain, Ga., assignor to Milliken Research Corporation, Spartanburg, S.C.

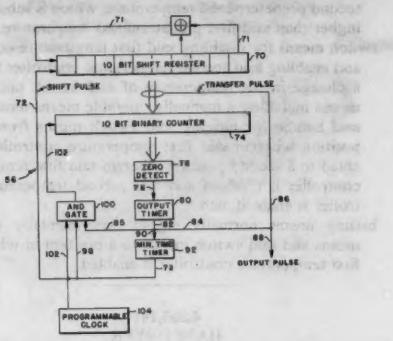
Continuation of Ser. No. 99,461, Dec. 3, 1979, abandoned, and Ser. No. 939,843, Sep. 5, 1978, abandoned, which is a division of Ser. No. 899,191, Apr. 24, 1978, Pat. No. 4,160,359. This application April 20, 1981, Ser. No. 255,207

The portion of the term of this patent subsequent to July 10, 1996, has been disclaimed.

Int. Cl.³ G06M *3/02*

U.S. Cl. 235—92 CT **2 Claims**

1. Apparatus to provide a pre-selected number of random pulses per unit time comprising: a multi-bit shift register including a means to supply an input logic pulse to said shift register which includes a feed back pulse from at least one of the later stages of said shift register to the input of said shift register to provide a plurality of random pulses from said shift register, a digital counter operably associated with said shift register and being activated by a pulse from said shift register to countdown to a pre-selected value, detection means to detect when said counter has completed the countdown to its pre-selected value to provide an output pulse and a timer means operably associated with said detection means and receiving the output pulse therefrom to transfer the contents of said shift register to said digital counter and to control the operation of a desired machine, said timer means including a minimum time timer



means to allow a clock pulse to be delivered to said counter to count down said counter to a pre-selected value when the minimum time timer has timed out.

4,365,146

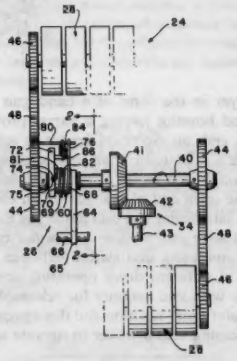
ROTARY DRIVE ANTI-BACKLASH DEVICE

Bruno S. Smilgys, Hartford, Conn., assignor to Veeder Root Industries Inc., Hartford, Conn.

Filed October 8, 1981, Ser. No. 309,818

Int. Cl.³ G06C *25/00*

U.S. Cl. 235—131 R **7 Claims**



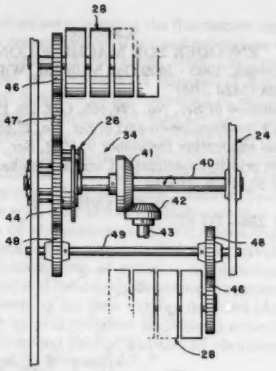
1. In a resettable fluid delivery register having a resettable rotary counter with a plurality of coaxial rotary counter wheels of ascending order, a rotary drive train connected to the lowest order counter wheel to rotate the counter for registering the amount of fluid delivered, and rotary drive anti-backlash means for removing inertia overtravel in the rotary drive train upon termination of a fluid delivery, the anti-backlash means comprising first rotary member means connected to be rotated in one angular direction thereof by the rotary drive train, second non-rotatable member means, a reverse bias follower rotatable coaxially with said first rotary member means, reverse bias spring means interconnecting the follower and one of said member means, and friction means interconnecting the follower and the other of said member means to restrain relative angular rotation thereof and thereby to bias the said first rotary member means in its reverse angular direction to its said one angular direction with the reverse bias spring means, the

improvement wherein the said other member means comprises a first annular friction drum coaxial with the follower, wherein the friction means comprises a coil spring having a first free end, a second end connected to said follower, and an intermediate helical coil spring section in frictional engagement with said first annular friction drum and extending generally helically from its said first free end in an angular direction to increase the frictional engagement of the coil spring section with the first annular friction drum with the reverse bias spring means, and wherein the said one member means comprises means engageable with the said free end of the coil spring to reduce the frictional engagement of the coil spring section with the first annular friction drum at a predetermined angular loading of the reverse bias spring means.

4,365,147
ROTARY DRIVE ANTI-OVERTRAVEL DEVICE

Phillip J. Lombardo, Simsbury, and Bruno S. Smilgys, Hartford, both of Conn., assignors to Veeder Root Industries, Inc., Hartford, Conn.

Filed October 8, 1981, Ser. No. 309,819
Int. Cl.³ G06C *25/00*
U.S. Cl. 235—131 R **13 Claims**

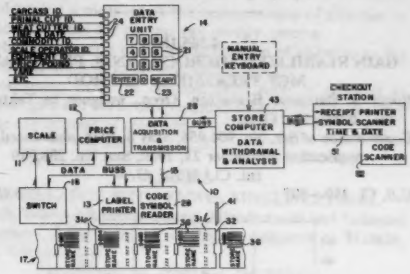


1. In a fluid delivery register comprising a rotary counter and a rotary drive train connected to rotate the counter for registering the amount of fluid delivered and having a rotary drive anti-overtravel device for preventing overtravel of the counter at the termination of a fluid delivery, the improvement wherein the rotary drive train comprises coaxial, relatively rotatable, rotary drive and driven members rotatable in one angular direction thereof during rotation of the counter to register the amount of fluid delivered and wherein the anti-overtravel device comprises a first fixed annular brake drum coaxial with the rotary drive and driven members, and a coil spring having first and second ends connected to said rotary drive and driven members respectively and an intermediate helical coil spring section mounted for coaxial frictional engagement with the annular brake drum and extending generally helically in an angular direction tending to increase the said frictional engagement with the annular brake drum upon rotation of the driven member in said one angular direction relative to the drive member, the drive member positively rotating the driven member in said one angular direction in first relative angular positions thereof and the helical coil spring engaging the brake drum to brake the driven member against rotation in said one angular direction in second relative angular positions of the drive and driven members having a predetermined limited relative angular displacement of the driven member in said one angular direction relative to the drive member from their said first relative angular positions.

4,365,148
DATA PROCESSING SYSTEM

John A. Whitney, Fort Wayne, Ind., assignor to Franklin Electric Co., Inc., Bluffton, Ind.

Continuation-in-part of Ser. No. 105,149, Dec. 19, 1979, abandoned. This application June 4, 1981, Ser. No. 270,239
Int. Cl.³ G06K *15/02*
U.S. Cl. 235—383 **20 Claims**

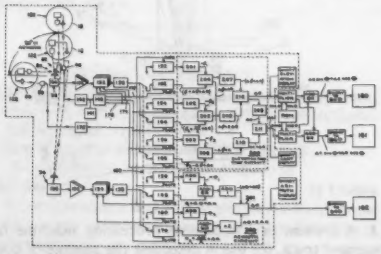


1. The method of processing a series of packages utilizing a plurality of labels having nonrepetitive machine readable symbols thereon, a computer-scale, a central computer, and a symbol scanner, comprising the steps of entering a plurality of package-related data, including the price, in the computer-scale, consecutively weighing said packages and for each package computing the total cost and printing at least the package cost and weight on a label associated with the package, responding to the package associated label and generating a signal identifying said symbol on said label, said plurality of data, said weight, said total cost and said identifying signal forming a group of package-related data, transmitting said group of package-related data to the central computer and storing said data in said central computer, and scanning said symbol and retrieving said total cost from said group of package-related data.

4,365,149
MORTAR FIRE CONTROL SYSTEM

Gerald Falbel, Stamford, Conn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 31, 1980, Ser. No. 174,093
Int. Cl.³ G06F *15/58*; F41G *1/34, 3/00*
U.S. Cl. 235—404 **11 Claims**



1. A mortar fire control system for indicating the angular orientation of a mortar barrel in any one predetermined plane of a three axis coordinate system, comprising:

means for determining a reference angular orientation of said barrel in said plane;

means for electrically storing said angular orientation of said reference;

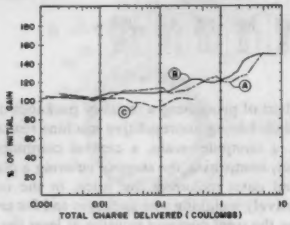
means for electro-optically detecting a change of said barrel from said reference to a first angular orientation of said barrel in said plane;
means for determining said first angular orientation;
means for electrically storing said first angular orientation;
means for electrically determining by complement subtraction circuits a difference in said reference to said first angular orientation; and
means for displaying said difference.

4,365,150

GAIN STABILIZED MICROCHANNEL PLATES AND MCP TREATMENT METHOD

Roger S. Bateman, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 904,058, May 8, 1978, abandoned. This application November 21, 1980, Ser. No. 208,910
Int. Cl.³ H01J 43/04
U.S. Cl. 250—207 **3 Claims**



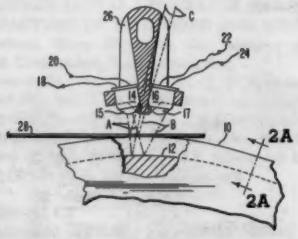
1. In a microchannel plate comprising a multiplicity of elongate tubular channels formed of a lead-containing glass, each such channel including a secondary electron-emissive interior wall surface region, the improvement comprising the inclusion of cesium oxide in said region in an amount sufficient to increase the gain and improve the aging rate of said plate.

4,365,151

SENSOR FOR A DOCUMENT PROCESSOR

Harold A. Fasig, Plymouth, and Anthony Horak, Detroit, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed September 2, 1980, Ser. No. 183,012
Int. Cl.³ G01V 9/04
U.S. Cl. 250—222 R **9 Claims**



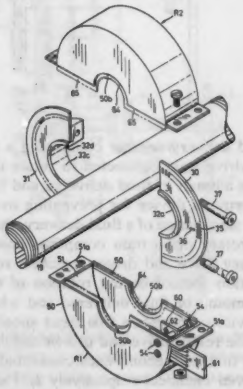
1. A system, in a document processing machine having a document track, for use in detecting the passage of documents along the track, comprising:
an alignment drum having a substantially cylindrical outer surface aligned along the track to aid in the transport of documents;
said drum including a reflective substantially cylindrical surface recessed below said outer surface;
a light source and a light sensor; and
means, including a housing, supporting said light source and said light sensor in positions to enable light from said light source to be reflected from said reflective surface of the drum over a path to energize the light sensor and cause the light sensor to provide an output indicative of the absence of a document from the path adjacent to the drum;
the alignment of said outer surface of said drum relative to the housing enabling light to be reflected from the surface of a document present in the track, adjacent to the drum, over a path which substantially misses the sensor, causing the sensor to provide an output indicative of the presence of a document.

4,365,152

ENCODER FOR MACHINE CONTROL

Franc Gergek, 1905 - 2600 Don Mills Rd., Willowdale, Ontario, Canada (M2J 3B4)

Continuation of Ser. No. 198,465, Oct. 20, 1980, abandoned, which is a continuation-in-part of Ser. No. 25,583, Mar. 30, 1979. This application December 9, 1981, Ser. No. 329,044
Claims priority, application Canada, October 3, 1978, 312625; October 31, 1978, 315014
Int. Cl.³ G01D 5/34
U.S. Cl. 250—231 SE **12 Claims**



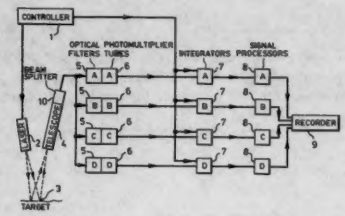
1. An encoder attachment for a rotatable control shaft, comprising,
a pair of companion shells for surrounding the shaft in abutting relationship to form a casing,
each shell having spaced-apart sidewalls having edges for abutting the walls of the other shell and a connecting wall,
each sidewall having a central recess extending inward from said edges to form an opening to accommodate the shaft and provide a clearance gap,
photocell means and light emitting means mounted in one of said shells,
a pair of optical disc segments for mounting on the shaft within the casing to form an optical sensing disc.

4,365,153

DETECTION OF CERTAIN MINERALS OF ZINC, TUNGSTEN, FLUORINE, MOLYBDENUM, MERCURY AND OTHER METALS USING PHOTOLUMINESCENCE

Harold O. Seigel, Don Mills, and John C. Robbins, Alliston, both of Canada, assignors to Scintrex Limited, Alliston, Canada

Filed June 16, 1980, Ser. No. 159,792
Claims priority, application United Kingdom, June 25, 1979, 7922000
Int. Cl.³ G01V 5/00
U.S. Cl. 250—253 26 Claims



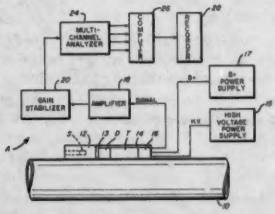
1. A method of selectively rejecting the fluorescent response of the abundant photoluminescent rocks and substances which may occur at the surface of the earth, while detecting the fluorescent response of a non-uranyl mineral of economic significance selected from the group consisting of minerals of zinc, fluorine, tungsten, molybdenum, mercury and other elements having lifetimes of photoluminescence between 1 and 50 microseconds through consideration of their differences in photoluminescent lifetimes; said method comprising the steps of directing at the ground electromagnetic radiation having an intensity that varies with time and of a wavelength that causes photoluminescence of said mineral; selectively detecting photoluminescent emission from said mineral in a wavelength region which is characteristic of emission of photoluminescence of said mineral; and selectively detecting the presence of said mineral by measuring the time varying detected photoluminescence excited by said radiation and due to minerals selected from said group and having lifetimes of photoluminescence between 1 and 50 microseconds.

4,365,154

DETECTION OF IMPURITIES IN A FLUID CONTAINING FREE GAS USING NUCLEAR TECHNIQUES

Dan M. Arnold, and Hans J. Paap, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed March 6, 1980, Ser. No. 127,700
Int. Cl.³ G01V 5/00; G01T 1/169
U.S. Cl. 250—270 18 Claims



1. A method for analysis of a multiphase fluid, containing liquid and free gas, flowing in a conduit to determine the salt content of the fluid, comprising the steps of:

(a) bombarding the fluid with fast neutrons which are slowed down and thereafter engage in thermal neutron capture reactions with materials in the fluid;

(b) obtaining gamma ray energy spectra of the materials in response to the capture of thermal neutrons by the materials in the fluid;

(c) obtaining a measure of the concentration of hydrogen in the fluid from the gamma ray energy spectra;

(d) obtaining from the measure of hydrogen concentration the hydrogen index of the fluid;

(e) obtaining a measure of the concentration of chlorine in the fluid from the gamma ray energy spectra;

(f) obtaining a ratio of the concentration of chlorine to the concentration of hydrogen; and

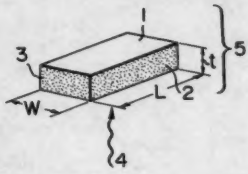
(g) obtaining from the concentration ratio of chlorine to hydrogen and the hydrogen index of the fluid a measure of the salt content of the fluid.

4,365,155

SCINTILLATOR WITH $ZNWO_4$ SINGLE CRYSTAL

Tetsu Oi, Tokyo; Kazumasa Takagi, Hinodemachi, and Tokumi Fukazawa, Tachikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed March 20, 1980, Ser. No. 132,132
Claims priority, application Japan, March 28, 1979, 54-35463
Int. Cl.³ C09K 11/12
U.S. Cl. 378—49 14 Claims



8. A scintillation counter adapted for counting incident X-rays, comprising:

a housing having a window for receiving incident X-rays;

a scintillator crystal formed of a zinc tungstate single crystal having an impurity content of not more than 50 ppm and a thickness of 2 to 4 mm and disposed in said housing adjacent to said window for receiving incident X-rays and emitting light rays of a maximum luminescence wavelength of 480 nm; and

a photo-detector disposed adjacent to the rear surface of said scintillator crystal in the housing for detecting the light rays emitted from the scintillator crystal, thereby detecting the incident X-rays.

4,365,156

TUNABLE $\theta-2\theta$ DEVICE

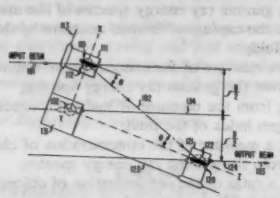
Jene A. Golovchenko, Basking Ridge, and Richard A. Levesque, High Bridge, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed December 23, 1980, Ser. No. 220,010
Int. Cl.³ G01N 23/20; G01J 3/12, 3/18
U.S. Cl. 378—84 11 Claims

1. A device comprising a first rotary member which directs at least a portion of an intercepted input beam of radiation so as to intercept a second rotary member,

CHARACTERIZED IN THAT said first and second rotary members are connected to a third rotary member by first and second sliding linear members, respectively, with said linear members located at right angles to one another, and with one of said rotary members capable of rotation about a fixable pivot point, and with the other two of said rotary members capable of rotation about pivot points which are capable of motion only along second and third

parallel linear axes, respectively, and with said fixable pivot point being located so that a first axis drawn through



said fixable pivot point and parallel to said second and third axes thereby forms three equally spaced axes.

4,365,157

FLUID ANALYZER UTILIZING A LASER BEAM

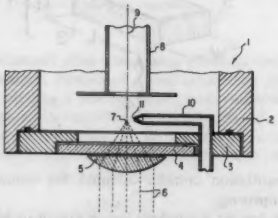
Eberhard Unsöld, Oberschleissheim; Gerhard Renner, Eichenau, and Reiner Wechsung, Cologne, all of Fed. Rep. of Germany, assignors to Gesellschaft für Strahlen-und Umweltforschung mbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 82,603, Oct. 9, 1979, abandoned. This application June 8, 1981, Ser. No. 271,376

Claims priority, application Fed. Rep. of Germany, October 9, 1978, 2844002

Int. Cl.³ B01D *59/44*

U.S. Cl. 250—282 **8 Claims**



1. A method for studying a fluid comprising: forming a stream of such fluid in a vacuum chamber; exciting the stream by causing a pulsed laser beam to impinge thereon to produce photoionized ions of molecules of the fluid; and subjecting the resulting photoionized ions to a mass analysis operation in a time of flight mass spectrometer including a time of flight tube constituting the input portion of the spectrometer and enclosing an electric field free region, the tube being disposed in the vacuum chamber, said step of subjecting being carried out by causing the ions to pass through the field free region of the tube.

4,365,158

HELIUM LEAKAGE DETECTOR

Jacques Tallon, Annecy, France, assignor to Societe Anonyme Dite: Compagnie Industrielle des Telecommunications Citalcatel, Paris, France

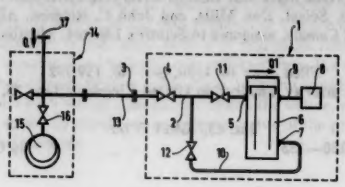
Filed 1981, Ser. No. 233,236

Claims priority, application France, 1980, 80 02923

Int. Cl.³ B01D *59/44*

U.S. Cl. 250—288 **4 Claims**

1. A helium leakage detector including an inlet pipe and a mass spectrometer, the improvement wherein said detector includes a molecular diffusion pump, said spectrometer includes a measuring spectrometric cell, and said cell is disposed in parallel with said molecular diffusion pump, an isolating valve within said inlet pipe upstream of said molecular diffusion pump, said molecular diffusion pump having an inlet and an outlet and whose outlet is short-circuited at the diffusion pump inlet by a short-circuit pipe, said short-circuit pipe connecting to said inlet pipe downstream of said isolating valve and upstream of said diffusion pump inlet, and a constriction being provided between the diffusion pump outlet and inlet



within the short-circuit pipe; whereby, the necessity of using a vane pump is avoided, allowing a recirculating loop of gas to be maintained within the system for some period of time for measuring purposes.

4,365,159

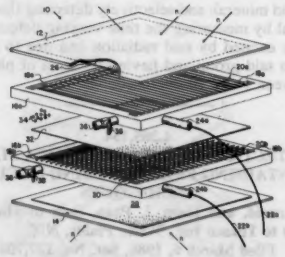
LITHIUM-6 FOIL NEUTRON DETECTOR

Charles A. Young, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed November 3, 1980, Ser. No. 203,006

Int. Cl.³ G01J *1/18;* H01J *47/12*

U.S. Cl. 250—385 **15 Claims**



1. Neutron detection apparatus comprising:

a selected number of flat surfaces of lithium-6 foil, each said flat surface of lithium-6 foil comprising a flat lithium-6 sheet, the thickness of each of said sheets being less than the range of a triton particle through lithium;

a gas mixture in contact with each of said flat lithium foil surfaces for selectively reacting to charged particles radiated from said lithium-6 foil, said gas mixture comprising a counting gas mixture which is readily ionized by triton particles passing through said counting gas mixture;

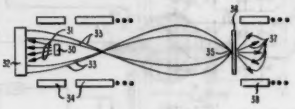
container means for sealing said lithium foil and said reacting gas mixture within a volume from which water vapor and atmospheric gases are excluded, said container means having walls which are transmissive to neutrons; and

monitoring means in contact with said gas mixture for detecting reactions in said gas mixture, and for providing an output which is proportional to the flux of neutrons through said apparatus.

4,365,160
BRIGHTNESS ENHANCEMENT OF POSITRON SOURCES

Allen P. Mills, Jr., New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 2, 1980, Ser. No. 165,379
Int. Cl.³ G21K *1/08*
U.S. Cl. 250—396 R **18 Claims**



18. Apparatus for producing quasi-monoenergetic positron pulses, the apparatus being adapted to being traversed by the positrons in a longitudinal direction from an entrance side to an exit side, the apparatus comprising

(a) means for maintaining a substantially uniform constant longitudinal magnetic field B_o in a region of the apparatus comprising a drift region,

(b) means for maintaining a constant longitudinal magnetic field $B_m > B_o$ throughout a part of the drift region, thereby maintaining a magnetic mirror,

(c) an RF cavity, driven at the positron cyclotron resonance frequency, the cavity being located in the drift region at the exit side of the magnetic mirror, the cavity being adapted to impart only transverse energy to the positrons that pass through the cavity,

(d) electrical means for repelling positrons of longitudinal energy less than a predetermined energy ϵ_l, the means being located in the drift region at the exit side of the RF cavity,

(e) means for applying a time-varying potential along an acceleration region, the acceleration region being located at the exit side of the electrical means for repelling charged particles,

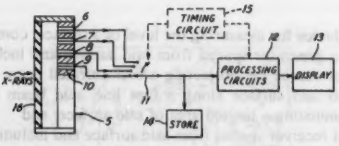
characterized in that the apparatus further comprises

(f) means for subjecting positrons in an interaction region to nonconservative forces.

4,365,161
DETECTOR FOR RESPONDING TO A TWO-DIMENSIONAL PATTERN OF X-RADIATION

Brian L. Dalton, London, and Robert J. Froggatt, Southall, both of England, assignors to E M I Limited, Hayes, England

Filed August 6, 1980, Ser. No. 175,719
Claims priority, application United Kingdom, August 10, 1979, 7927968
Int. Cl.³ H05G *1/60*; A61B *6/00*; H01J *39/28*
U.S. Cl. 378—99 **7 Claims**

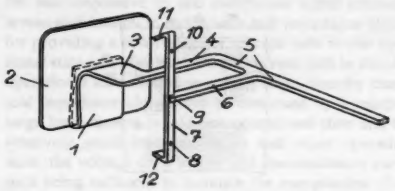


1. A detector for responding to a two-dimensional pattern of X-radiation emergent from an object under examination to generate discrete electrical signals indicative of the amounts of radiation received at each of many locations distributed over the pattern, said detector comprising a substantially flat chamber, containing a noble gas, with an X-ray previous input window disposed to receive said pattern of radiation and a back-plate for said chamber disposed opposite said window and containing a respective electrical contact member for each of said locations, the contact members being exposed to said gas and mutually insulated so as to create an array of capacitive probes each capable, when suitable operating potentials are applied to the chamber, of storing charge indicative of the amount of radiation at the appropriate location of said pattern, and said detector further including interrogation means for sequential interrogating said contact members to sense the charges stored thereby.

4,365,162
DEVICE FOR HOLDING X-RAY-SENSITIVE FILMS FOR ODONTOLOGICAL RADIOGRAPHS

Sven Jarby, Postfach 38, CH-9470 Buchs SG, Switzerland

Filed 1980, Ser. No. 120,756
Claims priority, application Switzerland, March 9, 1979, 2292/79
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—170 **9 Claims**



1. Device for holding X-ray film during the taking of radiographs of patients' teeth with X-rays emanating from a cone of an X-ray source, comprising in combination:

a bite wing extending in a horizontal center plane perpendicularly to an X-ray film plane, for retention of said device by patients' teeth;

an X-ray film holder carried by said bite wing and including means for retaining X-ray film centered relative to said horizontal center plane and alternatively vertically offset from said horizontal center plane;

a guide rod connected laterally to said bite wing and extending in said horizontal center plane perpendicularly away from said X-ray plane, for guidance of said X-ray cone;

an aiming rod extending in a vertical center plane of said centered and said vertically offset X-ray film;

a transverse rod extending in said horizontal center plane from said guide rod to said aiming rod, for mounting said aiming rod at a distance from said bite wing;

first means at said aiming rod for aiming said X-ray cone at an intersection of said horizontal and vertical center planes on said centrally retained X-ray film in the taking of radiographs of at least the crowns of upper and lower teeth; and

second means on said aiming rod for aiming said X-ray cone at an intersection of horizontal and vertical center lines of said vertically offset X-ray film in the taking of radiographs of root portions of said teeth.

4,365,163
PATTERN INSPECTION TOOL - METHOD AND APPARATUS

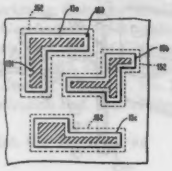
Donald E. Davis, Wappingers Falls; Richard D. Moore; Philip M. Ryan, both of Hopewell Junction, and Edward V. Weber, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed December 19, 1980, Ser. No. 218,323
Int. Cl.³ H01J *37/00*
U.S. Cl. 250—491.1 **13 Claims**

1. A method of positioning and inspecting a patterned workpiece comprising the steps of:

placing a patterned workpiece, provided with a multiplicity of patterns, to be inspected in an inspection apparatus,

directing a beam to scan a selected region overlying a first edge of a selected first pattern of said multiplicity of patterns on said workpiece,
measuring and storing the signal created by the beam scanning said region,
directing the beam to scan a second selected region overlying a second edge of said first pattern,
said second edge being substantially parallel to said first edge,
measuring and storing the signal created by the beam scanning said second region,
directing the beam to scan a third selected region overlying a third edge of said first pattern,
said third edge being at an angle with respect to said first and second edges,
measuring and storing the signal created by the beam scanning said third region,
directing the beam to scan a fourth selected region overlying a fourth edge of said first pattern,



said fourth edge being substantially parallel to said third edge,
measuring and storing the signal created by the beam scanning said fourth region, and
using said measured signals from said first, second, third and fourth regions to align the scanned edges of said first pattern to a predetermined inspection position,
directing the beam to scan over the entire said first pattern, measuring the signals created by the beam scanning said first pattern, and comparing the measured signals from said first pattern to the information used to create the patterned workpiece to detect defects in said pattern, and
directing the beam to scan the area surrounding said first pattern and comparing the measured signal from the area surrounding said one pattern to the information used to create the patterned workpiece to detect defects outside of said first pattern.

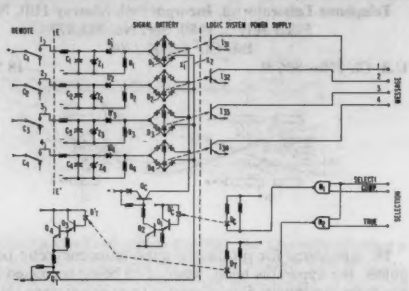
4,365,164

VITAL CONTACT ISOLATION CIRCUIT

Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed 1981, Ser. No. 225,813
Int. Cl.³ G02B *27/00*
U.S. Cl. 250—551 **14 Claims**

1. A coupling arrangement for coupling an indication of the state of a contact in the form of a dynamic signal without electrically connecting a representation of said dynamic signal to said contact or any circuit electrically connected thereto, said coupling arrangement comprising:
control means for generating two streams of alternate sequential control pulses,
a pair of control pulse responsive switches, each responsive to a different one of said stream of pulses,
a pair of conductors,
a pair of gating means each responsive to a different one of said switches for connecting one of said two conductors to one of two different potential sources in time coincidence with said two streams of optical pulses,
circuit means, including said contact and connected to said two different conductors, including isolator means for energizing an output of said isolator means in coincidence with one or another of said control pulse streams depending on the condition of said contact,
whereby when said contact is in one state, said output of said



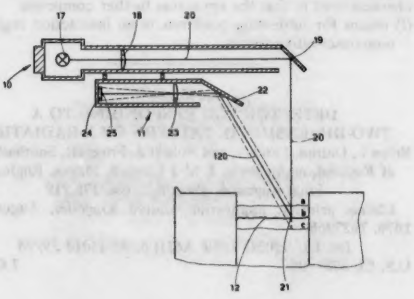
isolator means is energized coincident with one stream of said pulses, and when said contact is in another state, said output of said isolator means is energized coincident with said other of said pulse stream.

4,365,165

LEVEL MEASUREMENT DEVICE

Ferruccio D. Vedova, Zugliano, Italy, assignor to CEDA S.p.A., Udine, Italy

Filed December 18, 1979, Ser. No. 105,006
Claims priority, application Italy, December 20, 1978, 83526 A/78
Int. Cl.³ G01N *15/06*
U.S. Cl. 250—577 **9 Claims**



1. A device for measuring the level of a surface, comprising:
a light generator spaced from said surface and including a light source for projecting a concentrated beam of light onto said surface along a first line, said beam of light illuminating a limited area of said surface; and
a light receiver spaced from said surface and including light sensitive means and means for focusing onto said light sensitive means the light diffused from said limited area of said surface along a second line arranged at an angle to said first line so as to produce an image of said limited area, said position of said image on said light sensitive means varying with changes in the level of said surface and said light sensitive means being responsive to the position of said image thereon, and including first means responsive to said light sensitive means for producing an output signal which indicates the position of said image on said light sensitive means.

4,365,166

WIND ENGINE WITH RADIAL FLOW WHEEL, PARTIALLY PROTECTED, WITH FIXED BLADES OF LARGE DIAMETER

Adolfo Baccini, corso Italia 23, Firenze, Italy

Filed August 21, 1980, Ser. No. 180,116
Claims priority, application Italy, August 28, 1979, 9520 A/79
Int. Cl.³ F03D 3/04
U.S. Cl. 290—55 3 Claims

1. In a wind engine having a horizontal shaft, the improvement comprising:

a radial flow wheel with blades of large diameter fixed to said horizontal shaft;

a wall for shielding said blades during rotation thereof when said blades are in a position below said shaft;

said wheel having several blades each of which is fixed to said shaft;

said blades being fixed to said shaft to form a spoke wheel arrangement with a semi-circular profile arrangement;

wind braces connected said blades together to form a sturdy structure non-deformable under the pressure of a strong wind;

a cylindrical carrying construction for said shaft, said wall forming part of said carrying construction;

said wheel having means to permit it to rotate about its own vertical axis of symmetry at the top of said carrying construction whereby to bring about the condition of radial flow of the wind; and

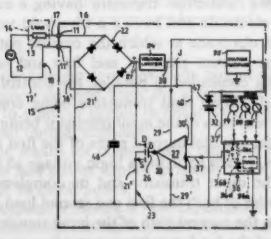
at least one current generator mounted at each end of said shaft to transform the mechanical energy produced by said shaft into electrical energy.

4,365,167

SWITCHOVER SYSTEM FOR BINARY LOAD CONTROL

Günther Weimer, Gerlingen, and Henning Becker, Schönaich, both of Fed. Rep. of Germany, assignors to Centra-Bürkle GmbH & Co., Schönaich, Fed. Rep. of Germany

Filed June 23, 1981, Ser. No. 276,660
Claims priority, application Fed. Rep. of Germany, June 25, 1980, 3023753
Int. Cl.³ F23N 5/20; G05D 23/00
U.S. Cl. 307—66 10 Claims



1. A system for controlling the energization of a load-operating impedance element connected across a power supply, comprising:

a high-resistance d-c circuit branch in series with said impedance element, said branch including a voltage limiter, a voltage multiplier with an input energized by said voltage limiter and a switching stage energized by said voltage multiplier, said switching stage having an output carrying a potential whose absolute magnitude is higher than that of the maximum output voltage of said voltage limiter in a first operational state and is lower than that of said maximum output voltage in a second operational state thereof;

a differential amplifier having a first input connected to said voltage limiter in parallel with the input of said voltage multiplier and having a second input connected to the output of said switching stage for emitting a binary switchover signal depending on the operational state of said switching stage;

command means connected to said switching stage for altering the operational state thereof in response to a control variable;

and

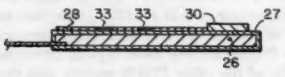
variable-resistance means coupled to said differential amplifier and responsive to said switchover signal connected across said branch in series with said impedance element for providing a low-resistance current path in one operational state and a high-resistance current path in the other operational state of said switching stage, thereby causing said impedance element to be traversed by a relatively large load current in said one operational state and by a relatively small load current in said other operational state, the voltage drop across said low-resistance current path being sufficient to maintain the energization of said switching stage in said one operational state.

4,365,168

ELECTRICAL CIRCUIT ON PORCELAIN COATED METAL SUBSTRATES

Guy J. Chaput, Carleton Place, and Edward M. Sich, Ottawa, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed July 14, 1980, Ser. No. 167,734
Int. Cl.³ H01H 13/70
U.S. Cl. 307—115 5 Claims



1. A circuit board comprising an electrically conductive metal substrate having a porcelain layer on at least one of its surfaces, a printed electrical circuit on said porcelain layer, a conductive element carried by the porcelain layer and spaced from the metal substrate by the porcelain layer, the conductive element and the printed electrical circuit not being directly electrically connected together, and means to connect the conductive element to ground to provide one capacitive coupling from the printed circuit to the metal substrate and another capacitive coupling from the metal substrate to the conductive element and in series with said one capacitive coupling, the value of said one capacitive coupling being determined by the area of contact between the printed circuit and the porcelain layer and by the thickness of the porcelain layer.

4,365,169

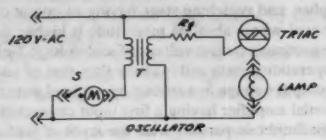
RANDOM PULSE DETECTOR SYSTEM

Allen H. Weston, 515 Hobart Rd., Marshall, Mich. 49068

Filed June 3, 1981, Ser. No. 269,808
Int. Cl.³ H01H 3/34
U.S. Cl. 307—141.4 11 Claims

1. A system for automatically switching a light circuit on for limited periods at random times comprising, electrical means

for insertion anywhere in a current supply circuit, said electrical means having voltage pulse sensing triac means for energizing said light circuit, and time limited triac energizing circuit means for maintaining said triac means and light circuit on.



4,365,170

SEMICONDUCTOR SWITCH

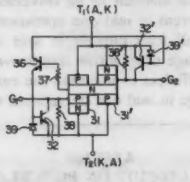
Shinji Okuhara, Fujisawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed September 19, 1980, Ser. No. 188,745

Claims priority, application Japan, September 21, 1979, 54-120860; September 21, 1979, 54-120861

Int. Cl.³ H03K *17/72*

U.S. Cl. 307—252 A **2 Claims**



1. A semiconductor switch comprising: a pair of anti-parallel PNPN switches each including a semiconductor PNPN structure having a common N-conductivity base region and at least three PN junctions; a first and a second transitor; a third transistor having two emitters and a base; and a resistor, an emitter and a collector of said first transistor being connected to a cathode and a P-conductivity region, correspondingly and respectively, of one of said PNPN switch pair, an emitter and a collector of said second transistor being connected to a cathode and a P-conductivity base region, correspondingly and respectively, of the other PNPN switch, said two emitters of said third transistor being connected to bases of said first and second transistors, respectively, a base of said third transistor being connected to said common N-conductivity base region of said pair of anti-parallel PNPN switches through said resistor.

4,365,171

LOW LOSS SNUBBER CIRCUIT

William R. Archer, Ft. Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed December 23, 1980, Ser. No. 219,735

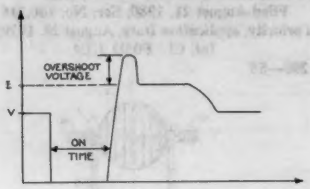
Int. Cl.³ H03K *17/08, 17/64*

U.S. Cl. 307—253 **3 Claims**

1. A voltage snubber circuit for limiting voltage overshoot during turn-off in a relatively high-frequency power switching circuit of the type including a controllable switching element connected in series with a primary winding of a power transformer across a source of DC voltage, a clamp winding coupled to the primary winding and connected via a clamping diode across the DC source for limiting the voltage applied to the switching element during turn-off and a first capacitor-diode circuit connected across the primary winding for dissipating the energy in the primary winding leakage flux during turn-off, the improvement comprising;

a second capacitor-diode circuit connected across the clamp winding for establishing current flow in the clamp winding at a voltage less than the source voltage; and

means for interconnecting said first and said second capacitor-diode circuits whereby turn-on of the switching element creates a current path through at least the capacitor portions of said first and said second capacitor-diode circuits in a direction to discharge the capacitor portions of said capacitor-diode circuits preparatory to turn-off of the switching element.



4,365,172

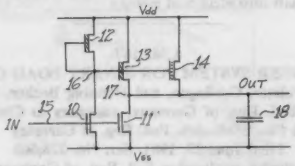
HIGH CURRENT STATIC MOS DRIVER CIRCUIT WITH LOW DC POWER DISSIPATION

Cordell E. Prater, Johnson City, Tenn., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed 1980, Ser. No. 111,447

Int. Cl.³ H03K *3/26, 19/094*

U.S. Cl. 307—270 **8 Claims**

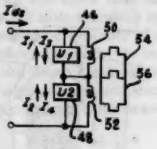


1. A circuit comprising an input transistor, a first load transistor, and a second load transistor, each said transistor being an insulated-gate field-effect transistor having a current path and a control electrode and having a threshold voltage level for the control electrode at which the current path becomes conductive, the current paths of said first and second load transistors being connected in parallel, the control electrodes of the first and second load transistors being connected together, the current path of the input transistor being connected in series with the parallel current paths of the first and second load transistors, means applying a logic voltage to the control electrode of the input transistor and its complement to the control electrodes of both the first and second load transistors, a node between the current path of the input transistor and the current paths of the load transistors providing an output, the threshold voltage of the second load transistor having a magnitude less than that of the input transistor but more than that of said first load transistor, said first load transistor being a depletion mode transistor.

4,365,173
PHASE SHIFTER ADJUSTMENT APPARATUS

Richard G. Kilcup, Glen Burnie, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed April 24, 1981, Ser. No. 256,881
Int. Cl.³ H01P 1/32
U.S. Cl. 307—412 12 Claims



1. In a microwave ferrite phase shifter unit, a phase shifter adjustment apparatus comprising in combination:

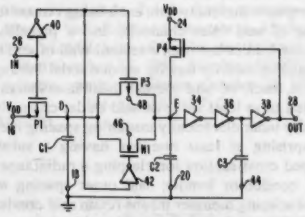
a ferrite phase shifter means comprising first and second ferrite cores and first and second control coils, said first and second control coils respectively controlling the magnetic field intensity B within said first and second ferrite cores thereby controlling the phase shift therein, said first and second control coils varying the magnetic field intensity B according to the amount of current flowing in said first and second control coils, and

a current source means operatively connected to said ferrite phase shifter means, said current source means controlling the polarity and amount of current flowing in said first and second control coils according to the polarity of the drive waveform which is applied to said ferrite phase shifter means.

4,365,174
PULSE COUNTER TYPE CIRCUIT FOR POWER-UP INDICATION

Nicholas Kucharewski, Lebanon, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 31, 1980, Ser. No. 174,184
Int. Cl.³ H03K 17/22, 17/284, 17/30, 5/153
U.S. Cl. 307—594 6 Claims



1. A pulse counter type power-up circuit providing an output indication delayed from the application of an operating potential to a power supply terminal comprising;

input and output terminals;

coupling means for continuously coupling said input terminal to said power supply terminal;

a source of clock pulses;

a first capacitor having a first capacitance value and a second capacitor having a second capacitance value substantially greater than said first capacitance value;

first switch means having first and second terminals defining the ends of a conduction path and a control terminal for controlling the conduction of said conduction path, said first terminal being coupled to said input terminal, said second terminal being coupled to said first capacitor, and said control terminal being coupled to said source of clock pulses and being responsive to a first level of said clock pulses for charging said first capacitor to a predetermined voltage level;

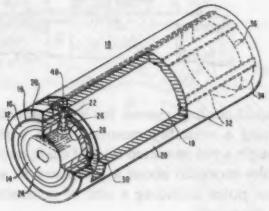
second switch means having first and second terminals defining the ends of a conduction path and a control terminal for controlling the conduction of said conduction path, said first terminal being coupled to said first capacitor, said second terminal being coupled to said second capacitor, and said control terminal being coupled to said source of clock pulses and being responsive to a second level of said clock pulses for transferring only a portion of the charge stored on said first capacitor to said second capacitor to thereby increase the voltage level developed across said capacitor by an incremental amount substantially less than said predetermined voltage level in response to each clock pulse; and

threshold detector means having an input coupled to said second capacitor and an output coupled to said output terminal and being responsive to the voltage developed across said second capacitor for providing an output indication at said output terminal when the voltage developed across said second capacitor increases above a predetermined threshold level.

4,365,175
FAST STARTING COLD SHIELD COOLING CIRCUIT FOR SUPERCONDUCTING GENERATORS

Phillip W. Eckels, Penn Hills, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed September 29, 1980, Ser. No. 191,564
Int. Cl.³ H02K 9/00
U.S. Cl. 310—53 12 Claims



1. A superconducting generator with an improved coolant flow reestablishment characteristic following a thermal transient, comprising:

a rotor assembly adapted to be supercooled;

a field winding rigidly attached to the rotor;

field winding retaining means disposed cylindrically about the field winding;

means for dissipating energy arising from a magnetic field, said dissipating means disposed cylindrically about the field winding retaining means;

a fluid coolant;

coolant sealing means disposed cylindrically about the dissipating means;

a coolant reservoir located in the center of the rotor assembly;

means for directing streams of coolant axially along the rotor assembly adjacent to the dissipating means, comprising an axial passage;

means for directing coolant radially outward from an inlet orifice adjacent the coolant reservoir toward the axial directing means, comprising a radial passage;

means for directing coolant radially inward from the axial directing means toward an outlet orifice adjacent the coolant reservoir, comprising a radial passage;

fluidic means for inhibiting coolant flow from the outlet

orifice through said combination of directing means toward the inlet orifice; and

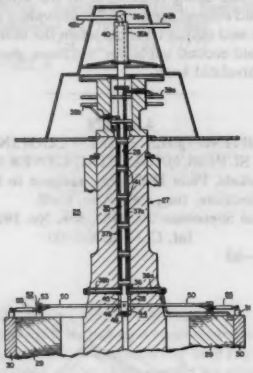
means for maintaining the coolant in the radially outward directing means at a lower temperature than the coolant in the radially inward directing means.

4,365,176

LIQUID COOLING SYSTEM FOR A HYDROGENERATOR ROTOR

Richard D. Nathenson, Pittsburgh; Charles W. Pipich, Monroeville, both of Pa., and Joseph R. Kopnitsky, deceased, late of Trafford, Pa. (by Mary C. Kopnitsky, executrix), assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed March 31, 1981, Ser. No. 249,305
Int. Cl.³ H02K 9/00
U.S. Cl. 310—54 12 Claims



1. A liquid-cooling system for a dynamoelectric machine's rotor having a rotatably mounted shaft with a central bore therethrough; a rim mounted on said shaft; and a multiplicity of salient poles mounted about a periphery of said rim, each of said salient poles including a coil of conductor; said cooling system comprising:

(A) a plurality of axial-coolant pipes including an intake pipe, and an outtake pipe concentrically disposed about said intake pipe;

(B) a rotor inlet pipe connected to said intake pipe, and connectable at its other end to an external coolant supply system;

(C) a rotor discharge pipe connected to said outtake pipe, and connectable to said external coolant supply system;

(D) a manifold including a plurality of arcuately-shaped coolant pipes;

(E) a plurality of radially-directed pipes which hydraulically connect to said manifold, a preselected number of said radially-directed pipes being connected to said manifold to carry coolant to said salient poles, an other preselected number of said radially-directed pipes connected to said manifold to carry coolant away from said salient poles;

(F) a distribution block which is connected to said axial-coolant pipes and to said radially-directed pipes, said distribution block being disposed in said bore and including a base having pipe-connecting features and means for covering said base;

(G) means for circulating coolant within each of said salient poles; and

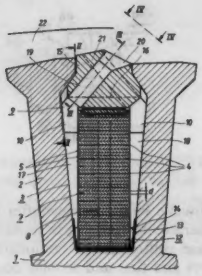
(H) means for connecting said manifold to said coolant circulating means.

4,365,177

GAS-COOLED ROTOR FOR A TURBO-GENERATOR

Kristian D. Madsen, Västeras, Sweden, assignor to ASEA Aktiebolag, Västeras, Sweden

Filed March 17, 1981, Ser. No. 244,575
Claims priority, application Sweden, April 2, 1980, 8002528
Int. Cl.³ H02K 1/32
U.S. Cl. 310—61 10 Claims



1. A gas cooled rotor for a turbo-generator, said rotor including a plurality of winding slots comprising:

a rotor winding containing a conductor bundle partially disposed in said winding slots, said conductor bundle being traversed by a plurality of substantially tangentially directed cooling channels;

a slot wedge for retaining said conductor bundle in said slots, said slot wedge including a plurality of at least three inlet channels, and outlet channels for a cooling gas, said inlet channels communicating with said cooling channels at one side of said conductor bundle and having an opening at the rotor periphery in a direction of rotation for the rotor, said outlet channels communicating with said cooling channels at the other side of said conductor bundle and being evenly distributed among wedge portions located between said inlet channels, said inlet channels having projections in a radial plane crossing corresponding projections of said outlet channels;

a radially outer electrical insulating spacing member, including a plurality of first spacing bodies between a first wall of said slot and said conductor bundle having first axial interspaces therebetween, each being connected to at least three of said inlet channels, and a plurality of second spacing bodies between a second wall of said slot and said conductor bundle having second axial interspaces in between, each of said second axial interspaces being connected to at least three of said outlet channels;

a radially inner electrically insulating spacing member means comprising at least one bar having a substantially U-shaped cross-section for clasping a radial inner portion of said conductor bundle; said outer spacing member and inner spacing member means retain said conductor bundle in a tangential direction with said inner spacing means abutting said walls and

a plurality of locking members for locking a number of conductors in said conductor bundle to each other.

4,365,178

LAMINATED ROTOR FOR A DYNAMOELECTRIC MACHINE WITH COOLANT PASSAGEWAYS THEREIN

Henry G. Lenz, Scotia, N.Y., assignor to General Electric Co., Schenectady, N.Y.

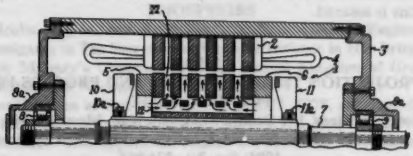
Filed June 8, 1981, Ser. No. 271,443
Int. Cl.³ H02K 9/00
U.S. Cl. 310—61 4 Claims

1. A laminated rotor assembly for a dynamo-electric machine having cast axial conductors and radial ventilating ducts

extending between said conductors at axially spaced intervals, characterized

(a) a plurality of substantially flat, annular main rotor laminae each formed with apertures therein to define, respectively, a plurality of conductor slots arcuately spaced adjacent to the periphery of the laminae and a plurality of axial coolant passageways arcuately spaced between the inner ends of said conductor slots and the inner diameter of the laminae,

(b) a plurality of substantially flat, annular radial duct laminae each provided with apertures that define, respectively, a plurality of conductor slots arcuately spaced adjacent to the periphery of the laminae, a plurality of axial coolant passageways arcuately spaced between the inner ends of the conductor slots and the inner diameter of the laminae, and a plurality of radial coolant duct slots each extending from the periphery of the laminae to points between the inner ends of



the respective adjacent conductor slots and the maximum outer extent of the respective adjacent axial coolant passageways, said points being radially positioned between said outer extent of said axial coolant passageways and the outer extent of other axial coolant apertures in adjacent main rotor laminae thereby to place the inner ends of a majority of the radial duct slots in overlapping relationship with respective juxtaposed axial coolant passageways in adjacent main rotor laminae,

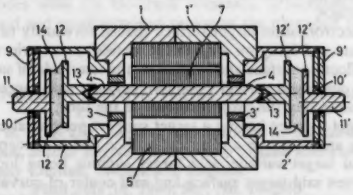
(c) said pluralities of main rotor laminae and radial duct laminae being aligned with each other to place their respective conductor slots in alignment, and a plurality of cast electrical conductors being positioned, respectively, in each of said conductor slots and joined together at the opposite ends thereof, respectively, by a pair of cast annuli integral with said conductors, said cast conductors and annuli being effective to hold the laminated rotor assembly together.

4,365,179

PULSE MOTOR

Casimiro Mayo Magdaleno, Toledo, Spain, assignor to Federico Marne Blanco, Valladolid and Gonzalo de Onate Fernandez de Gamboa, Madrid, both of, Spain, part interest to each

Filed October 21, 1981, Ser. No. 313,627
Claims priority, application Spain, October 21, 1980, 496.129
Int. Cl.³ H02K *7/00*
U.S. Cl. 310—81 **2 Claims**



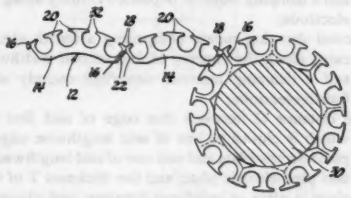
1. A pulse motor comprising a stator consisting of a core of magnetic plates activated by a coil, an upper part of said motor containing a semi-cylindrical cavity in which a cylindrical rotor is suspended on each end by a shaft, said stator, said coil, and said rotor being located in a chassis split into two halves which can be joined such that the outside of each of said semi-chassis has the end of the shaft of the rotor projecting from said semi-chassis, said ends of said shaft terminating in a conical shape, said ends being supported in rolling sleeves engaged in said semi-chassis, the inner diameter of said rolling sleeves being larger than the diameter of the shaft of the rotor and each conical end of the shaft of the rotor being connected by elastic means for the conversion of movement consisting of first and second disks, each of said disks having a smooth face and a face with a centered cylindrical projection, said first disk located toward the interior of the motor having a conical bore adapted to receive the corresponding conical end of the shaft of the rotor, and said second disk located toward the outside of the motor and having a projecting semi-shaft of the motor, and a third disk being interposed between said disks consisting of an elastically deformable material, said third disk being adhered to the smooth sides of said first and second disks, said means for the conversion of movement being hidden in frames that may be solidly connected to each semi-chassis and adapted to receive, in the end opposite the one attached to the semichassis, cylinder heads including bearing means for said projecting semi-shafts of the motor, said bearing means presenting, in relation to said rotor of said motor and to said shaft, an eccentricity that is larger than the difference of diameters that exists between said shaft of said rotor and the inside of said rolling sleeves, in such a way that said shaft of said rotor is constantly forced into contact with the inner surface of said rolling sleeves.

4,365,180

STRIP WOUND DYNAMOELECTRIC MACHINE CORE

Joseph P. Licata, and Dennis J. Ricker, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed June 25, 1981, Ser. No. 277,275
Int. Cl.³ H02K *1/06, 15/02*
U.S. Cl. 310—216 **6 Claims**



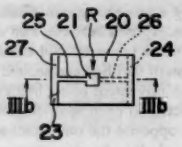
1. A wound core for a dynamoelectric machine comprising a strip of core material including a continuous array of pole teeth wound in helically overlapping and abutting relation about a longitudinal axis to provide a generally annular core of stacked helical laminations in which the pole teeth of successive laminations are longitudinally aligned to define core poles, the improvement wherein:

the strip of core material is formed in a series of arcuate segments connected end-to-end by integral portions of core material providing yieldable hinge joints between the ends of adjacent segments whereby such strip can be cut out from a sheet of core material with minimal material waste, the yieldable hinge joints each being generally located at the apex of an opening separating the ends of adjacent segments so that as the strip of core material is wound about said longitudinal axis, adjacent segments pivot relatively inward about the yieldable hinge joints thereby closing the opening separating the ends of adjacent segments so as to bring such segment ends into substantial juxtaposition, whereby stressing of the strip of core material is largely confined to the area of the yieldable hinge joints, tending to minimize the electrical losses associated with such stressing of the core material.

4,365,181
PIEZOELECTRIC VIBRATOR WITH DAMPING ELECTRODES

Takashi Yamamoto, Oshimizumachi, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed July 10, 1980, Ser. No. 168,285
Claims priority, application Japan, July 18, 1979, 54-99913[U]; May 26, 1980, 55-72778[U]
Int. Cl.³ H01L 41/08
U.S. Cl. 310—320 17 Claims



1. A piezoelectric vibrator of the energy trapping type which operates in the thickness vibrational mode, comprising:

an elongated ceramic piezoelectric plate having first and second opposed planar surfaces, and having opposite pairs of lengthwise and widthwise edges;

a first electrode deposited approximately at a center portion on said first planar surface of said piezoelectric plate;

a second electrode deposited approximately at a center portion on said second planar surface of said piezoelectric plate in face-to-face relation with said first electrode, said first and second electrodes adapted to receive an electrical signal which will cause said piezoelectric plate to vibrate primarily in the thickness vibrational mode;

first damping means comprising a third electrode located along the entirety of a first one of said widthwise edges and a damping material deposited entirely along said third electrode;

second damping means comprising a fourth electrode located along the entirety of said second widthwise edges and a damping material deposited entirely along said fourth electrode;

the distance G between that edge of said first electrode which is closest to one of said lengthwise edges of said piezoelectric plate and said one of said lengthwise edges of said piezoelectric plate, and the thickness T of the piezoelectric plate as measured between said planar surfaces satisfying the relationship $0 \leqq G/T \leqq 15$; and

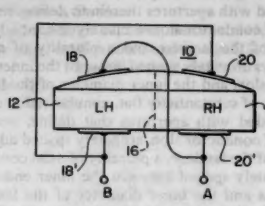
said first and third electrodes being electrically connected to each other and said second and fourth electrodes being electrically connected to each other.

4,365,182
METHOD OF FABRICATING ACCELERATION RESISTANT CRYSTAL RESONATORS AND ACCELERATION RESISTANT CRYSTAL RESONATORS SO FORMED

Arthur Ballato, Long Branch, and John R. Vig, Colts Neck, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed October 14, 1980, Ser. No. 196,508
Int. Cl.³ H03H 9/205
U.S. Cl. 310—361 6 Claims

1. An acceleration resistant crystal resonator comprising a single quartz resonator plate optically twinned into a left-handed (LH) portion and a right-handed (RH) portion, a pair of electrodes deposited on the top and bottom surface of said left-handed portion and a pair of electrodes deposited on the top and bottom surface of said right-handed portion, said resonator plate being mounted and bonded to the support structure of a hermetically sealed crystal resonator enclosure, and said pairs of electrodes being interconnected to each other and to

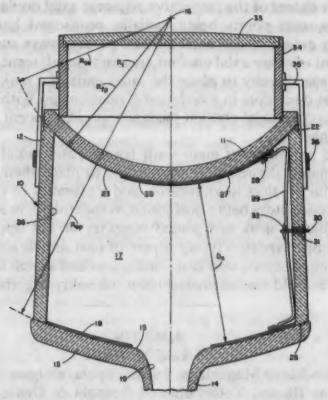


an oscillator circuit so that in-phase vibration of the two portions is assured.

4,365,183
PROJECTION TELEVISON TUBE AND PROCESS FOR FORMING SAME

Henry E. Kloss, 174 Brattle St., Cambridge, Mass. 02138

Continuation of Ser. No. 875,222, Feb. 6, 1978. This application 1981, Ser. No. 234,913
Int. Cl.³ H01J 31/00, 29/24
U.S. Cl. 313—478 8 Claims



1. An envelope for a projection television tube comprising:

an end plate having an internal reflective surface lying on a spherical surface having a center of curvature located forwardly of the end plate along the projection axis of the tube and an end plate peripheral area including a sealing surface lying on a spherical surface concentric with said reflective surface;

an electron beam target surface spaced forwardly of said end plate and lying on a spherical surface concentric with said reflective surface and located on the same side of said center of curvature as said reflective surface, said target surface intersecting the projection axis of the tube;

a target support having a target support peripheral edge sealing area lying on a spherical surface that is concentric with said target surface, said target support being located between said target surface and said center of curvature, and intersecting the projection axis of the tube, said target support also comprising an imperforate face plate for the envelope;

said target surface being secured to said target support;

a hollow, cylindrical member of predetermined length extending between said end plate peripheral area and said peripheral edge sealing area of said target support, said cylindrical member having an axis of symmetry coextensive with said

projection axis, and including opposite sealing end surfaces lying on spherical surfaces concentric with said reflective surface;

said cylindrical member and said target support peripheral edge sealing area being joined along a joint interface surface area lying on a spherical surface that is concentric with said reflective and target surfaces;

said cylindrical member and said end plate sealing surface also being joined along a joint interface surface area lying on a spherical surface that is concentric with said reflective and target surfaces;

said end plate, target support and cylindrical member being respectively bonded together along their mutual joint interface surface areas in sealed relationship.

4,365,184

PHOSPHORS

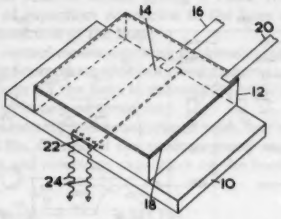
Malcolm Higton, and Aron Vecht, both of London, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, England

Continuation of Ser. No. 928,696, Jul. 27, 1978, abandoned, which is a continuation of Ser. No. 801,211, May 27, 1977, abandoned. This application March 10, 1980, Ser. No. 128,552

Claims priority, application United Kingdom, June 1, 1976, 22597/76

Int. Cl.³ H05B *33/10, 33/14*

U.S. Cl. 313—503 **13 Claims**



1. A process for making a DC electroluminescent device including the steps of

a. producing phosphor particles including a sulphide selected from the group consisting of strontium, calcium, barium and magnesium sulphide mixed with a dopant comprising cerium,

b. coating said phosphor particles with an element of group Ib of the Periodic Table to introduce said element into the extended surface of said particles,

c. embedding the coated particles in a matrix,

d. arranging the resulting particle bearing matrix as a phosphor layer in contact with two electrodes, and

e. passing a forming direct electrical current between the two electrodes until the electrical resistance is increased in a localized and predetermined region of the phosphor layer.

4,365,185

MAGNETRON HAVING THREE ALTERNATINGLY CONNECTED STRAPS

Michael B. C. Brady, Maldon, and Michael L. Goddard, Birmingham, both of England, assignors to English Electric Valve Company Limited, Chelmsford, England

Filed July 14, 1980, Ser. No. 167,843

Claims priority, application United Kingdom, July 14, 1979, 7924590

Int. Cl.³ H01J *23/22*

U.S. Cl. 315—39.69 **3 Claims**

1. A magnetron of the strapped anode type comprising an anode block having a plurality of radial vanes extending therewithin and three strapping members each co-axial but at different diameters from the center of said anode block, said middle strapping member being connected to alternate vanes and said

innermost and outermost strapping members each being connected to all of the remaining ones of said anode vanes.

4,365,186

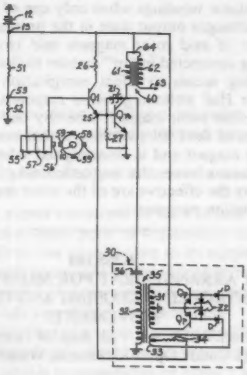
HIGH ENERGY MODULATION IGNITION SYSTEM

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Continuation-in-part of Ser. No. 46,569, Jun. 7, 1979, Pat. No. 4,292,569, and Ser. No. 923,828, Jul. 12, 1978, Pat. No. 4,216,412. This application December 3, 1980, Ser. No. 212,493

Int. Cl.³ H05B *37/02, 39/04, 41/36*

U.S. Cl. 315—209 R **9 Claims**



1. A method of starting fuel ignition in an internal combustion engine during compression stroke of a piston in said engine at a static timing angle in advance of top dead center position of said piston as stroboscopically measured, comprising in combination the steps of:

(a) electrically energizing an igniter at said static timing angle within the zone of non-detonation of said fuel, said static timing angle being within one degree from the boundary between the zones of detonation and non-detonation; and

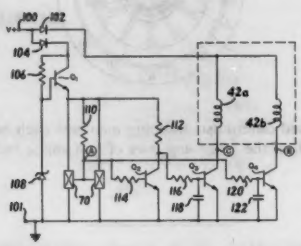
(b) creating an electrical arc at the base of said igniter within the internal combustion engine wherein the magnitude of the length of said arc is directly related to the angular magnitude of the static timing angle, concurrently with step (a), the greater the angular magnitude the longer the length of arc capable of being created, and wherein the ignition voltage waveform amplitude is at a realtively constant level for any said static angle magnitude.

4,365,187

BRUSHLESS D.C. MOTOR

Wharton McDaniel; Fred A. Brown, both of Woodstock, and Donald Thompson, Kingston, all of N.Y., assignors to Rotron Incorporated, Woodstock, N.Y.

Filed May 15, 1980, Ser. No. 150,202
Int. Cl.³ H02K 29/00
U.S. Cl. 318—254 9 Claims



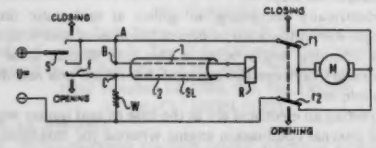
1. In combination, a D.C. brushless motor with stator windings and a permanent magnet rotor, semiconductor commutation circuit means for switching current to the windings of the stator in dependence on the angular position of the rotor, the permanent magnets of the rotor extending arcuately less than 180° and operative to impart rotary motion to the rotor upon commutated energization of the stator winding, the commutation circuit means including at least two Hall switching means for changing output states in response to a magnetic field, said Hall switching means being arcuately displaced and connected with winding activating switching means to energize at least one of the stator windings when only one of said Hall switching means changes output state in the presence of a magnetic field of one of said rotor magnets said two Hall switching means being connected in "or" fashion to the winding activating switching means to effect energization of one winding when either Hall switching means responds to the magnetic field of the one rotor magnet, whereby one winding is energized as one of the Hall switching means enters the magnetic field of the magnet and is de-energized when the other Hall switching means leaves the magnetic field of the one magnet, and whereby the effective arc of the rotor magnet is increased for commutation purposes.

4,365,188

CIRCUIT ARRANGEMENT FOR MONITORING AND CONTROLLING CLOSING AND OPENING MOVEMENTS

Arthur Walter, Waldkirch, Fed. Rep. of Germany, assignor to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed August 13, 1980, Ser. No. 177,772
Claims priority, application Fed. Rep. of Germany, August 24, 1979, 2934401
Int. Cl.³ H02P 3/10, 3/20
U.S. Cl. 318—282 29 Claims



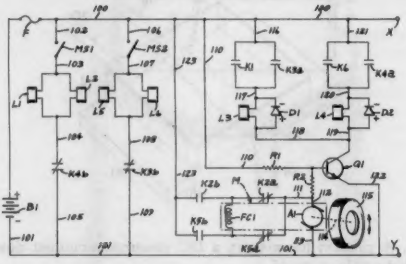
1. A control circuit for a reversible motorized drive used to produce closing and opening movements said control circuit comprising a feed circuit; switch means for connecting said feed circuit to said reversible motorized drive and having first and second positions corresponding respectively to said closing movement and said opening movement; an energizing device for moving said switch means to said first position when energized and for moving said switch means to said second position when deenergized; selector switch means for selecting an opening or closing movement, said selector switch means being arranged to engergize said energizing device from said feed circuit when closing movement is selected and to isolate said energizing device from said feed circuit when an opening movement is selected; a monitoring switch having first and second terminals, said monitoring switch being arranged to close when the closing movement is obstructed but being otherwise open; wherein said energizing device is connected between said first and second terminals and is short circuited on closing of said monitoring switch, and wherein a series monitoring circuit comprising said first terminal, said energizing device and said second terminal is operatively connected in parallel with said feed circuit by said selector switch means only when a closing movement is selected.

4,365,189

CONTROL CIRCUIT FOR REVERSIBLE ELECTRIC MOTORS

Raymond C. Hawkins, Minneapolis; Howard N. Seim, Columbia Heights, and Donald J. Haub, Champlin, all of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed August 20, 1979, Ser. No. 68,161
Int. Cl.³ B60K 1/02
U.S. Cl. 318—284 6 Claims



1. A circuit comprising, in combination, an electrically reversible DC motor having field and armature coils, means for reversing the flow of current through said field coil to reverse the direction of the motor, and a control circuit for sensing the rotation of said motor in a coasting state wherein said motor is rotating without voltage applied to said coils and for preventing the application of voltage to said field coil which would reverse the direction of said motor until said motor has slowed to a predetermined rotational velocity, said control circuit including detecting means connected in parallel with said armature coil for detecting voltage generated therein when said motor is in said coasting state, and preventing means responsive to said detecting means for preventing application of said reversing voltage to said motor while said detecting means is sensing said generated voltage.

4,365,190

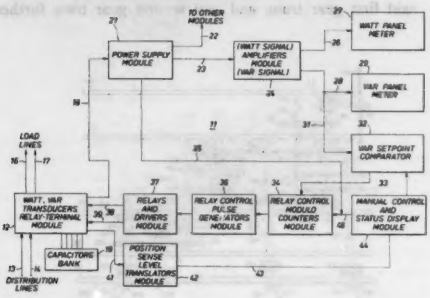
AUTOMATIC VAR CONTROLLER

Henry J. Pasternack, Houston, and Garry C. Keffer, Rosenberg, both of Tex., assignors to ASI Systems, Inc., Stafford, Tex.

Filed March 19, 1981, Ser. No. 245,685
Int. Cl.³ G05F 1/70
U.S. Cl. 323—211 20 Claims

1. An automatic var controller for reducing the reactive power by compensating for inductive loads on electrical lines, comprising:

(a) transducer means connected to the lines and providing analog voltages representative of var magnitudes;
(b) readout means giving visual readouts of the actual var conditions on the lines;
(c) a set point comparator having as its input the analog voltage representative of var magnitude;
(d) said set point comparator having internal selected positive and negative var values and circuitry providing output binary signals indicative of a needed change in capacitance connected to the lines and for adding or removing capacitance in certain magnitudes;



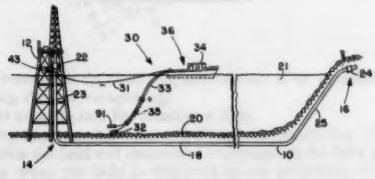
(e) second readout means giving a visual readout of the status of capacitors connected to the lines and available for connection to the lines;
(f) relay control means receiving the binary signals from said set point comparator for selectively adding and removing capacitors on the lines in accordance with a preselected series or binary program; and
(g) programming means associated with said relay control means for storage of the predetermined sequence in the adding and removing capacitors on the lines.

4,365,191

METHOD AND APPARATUS FOR ELECTRICAL SURVEYS OF OFFSHORE METAL STRUCTURES WITH CORRECTION FOR DISTANCE

Clark P. Weldon; Stephen L. Wolfson, and Marvin L. Miller, all of Houston, Tex., assignors to Harco Corporation, Medina, Ohio

Filed 1980, Ser. No. 125,885
Int. Cl.[3] G01R *31/02*; G01V *3/15*
U.S. Cl. 324—71 R **49 Claims**



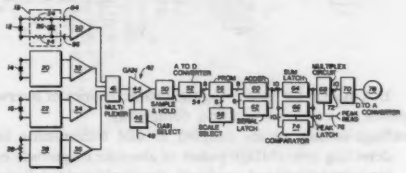
22. Apparatus for surveying a structure in an electrolyte, comprising sensing means for sensing at locations along the structure the electrical potential difference between the structure and the electrolyte, measuring means for measuring the approximate distances along the structure of a plurality of such locations relative to at least one of a reference position and a preceding such location to obtain information of the approximate position along the structure at which potential difference sensing has occurred, accurate measuring means for making an accurate measurement of distance along the structure of at least one of said sensing means and said measuring means relative to at least one of a reference position and a preceding location, and correcting means for correcting such approximate distances based on information from such accurate distance measurements.

4,365,192

ISOTOPIC BROAD-BAND SURVEY METER

William J. Rankin, Edina, and Jerome P. Whitaker, Hopkins, both of Minn., assignors to Holaday Industries, Inc., Edina, Minn.

Filed August 27, 1980, Ser. No. 181,826
Int. Cl.[3] G01N *31/02*
U.S. Cl. 324—72 **10 Claims**

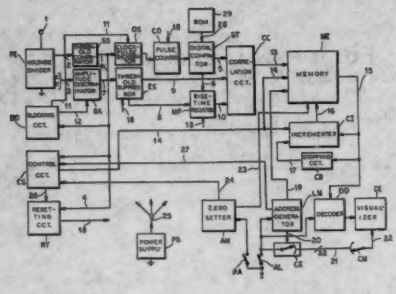


1. A circuit for providing an output indicative of voltage signals applied to at least one input port, said circuit comprising:
a control input port connected to receive a control voltage signal;
first switching means connected to each of said input ports and said control input ports to sequentially connect voltage signals from one of said ports to an output terminal;
conversion means connected to the output terminal of said switching means to receive signals therefrom and convert received signals to a digital representation;
an OR gate connected to receive the least significant output digits of said analog to digital conversion means and provide output signals representative of either a zero or non-zero output of said conversion means;
a gated detector connected to receive the output of said OR gate and providing a first command when the control voltage signal received at said control input port produces a non-zero digital signal at the output terminal of said conversion means and producing a second command when said conversion means produces a zero output;
second switching means connected to receive the commands provided by said detector means and provide a charging current of a first polarity when the output of said converter is non-zero and to provide a charging current of an opposite polarity when the output of said conversion means is zero; and
correcting means connected to said second switching means to receive charging currents therefrom and produce an output voltage integrated from said charging currents and apply said voltage to the input to said analog to digital converter means to correct the output signal produced by said input ports in response to the control voltage at the control input port.

4,365,193
OVERVOLTAGE-PULSE ANALYZER

Adriano Bollero, Rivarolo Canavese; Bruno Carpinello, Turin; Giuseppe Galliano, Turin, and Roberto Pomponi, Turin, all of Italy, assignors to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed August 1, 1980, Ser. No. 174,695
Claims priority, application Italy, August 2, 1979, 68599 A/79
Int. Cl.³ G01R *29/00, 19/16*
U.S. Cl. 324—102 7 Claims



1. A system for measuring the characteristics of overvoltage pulses on a transmission line, comprising:

voltage-sensing means coupled to said transmission line for detecting overvoltage pulses of absolute magnitude exceeding a predetermined sensitivity threshold and for distinguishing among a specified number m of discrete amplitude levels above said threshold;

timing means controlled by said voltage-sensing means for measuring an interval lasting from the instant of detection of an overvoltage pulse to at least the instant of attainment of the highest amplitude level reached thereby but not beyond the instant of disappearance of said overvoltage pulse, the intervals so measured being classified in a plurality of time periods represented by a specified number n of quantized duration signals;

memory means provided with m times n cells respectively assigned to different combinations of amplitude levels and quantized duration, said memory means having input connections to said voltage-sensing means and said timing means for addressing the assigned cell upon the disappearance of the detected overvoltage pulse;

incrementing means connected to said memory means for storing a progressively increasing numerical value in a cell so addressed, said numerical value representing the number of detected overvoltage pulses exhibiting the corresponding combination of amplitude levels and quantized duration;

indicator means connectable to any of said cells for reading out the contents thereof; and

clearing means connected to said memory means and operable to erase the contents of all said cells.

4,365,194
CONVERTIBLE MULTIRATE DIAL REGISTER FOR ENERGY CONSUMPTION METERS

Kenneth G. Halstead; Eugene C. Benbow, both of Raleigh, N.C., and Forrest E. Coyle, Penn Hills, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed July 14, 1980, Ser. No. 167,953
Int. Cl.³ G01R *15/08, 11/64*
U.S. Cl. 324—116 15 Claims

1. A convertible multirate dial register for meters having a rotatable measuring element responsive to the consumption of a quantity to be measured, said dial register comprising:

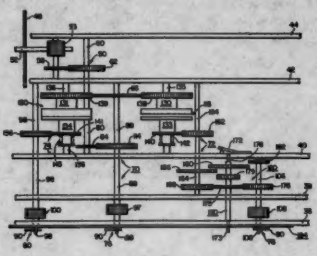
a front plate having plural sets of clock dial indicia;

a first set of dial indicators associated with a first set of dial indicia on said front plate;

a first gear train continuously rotated in response to the rotation of said measuring element for driving said first set of dial indicators;

a second set of dial indicators associated with a second set of said dial indicia wherein said second set of indicia are separately mountable to said front plate;

a second gear train including a clutch mechanism operable between coupling and uncoupling states and having an input and an output with said clutch input being driven by said first gear train, and said second gear train further



including shiftable gear means having first and second operating positions so as to be driven in response to said clutch output at either of first or second fixed rates of rotation when in said first or second operating positions, respectively, and said shiftable gear means further being in driving relationship with said second set of dial indicators so that said second set of dial indicators is rotatable at the same rate as said first set of dial indicators are rotated when said shiftable gear means is in said first operating position and at a different rate of rotation from said first set of dial indicators when said shiftable gear means is in said second operating position.

4,365,195
COPLANAR WAVEGUIDE MOUNTING STRUCTURE AND TEST FIXTURE FOR MICROWAVE INTEGRATED CIRCUITS

Ronald E. Stegens, Brookerville, Md., assignor to Communications Satellite Corporation, Washington, D.C.

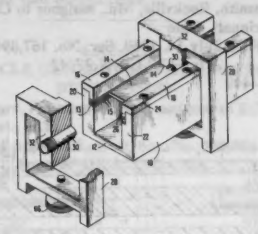
Filed December 27, 1979, Ser. No. 108,247
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—158 F 10 Claims

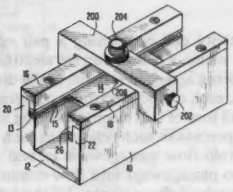
1. A microwave integrated circuit substrate holder and device for R.F. testing of such circuits comprising:

(a) a substrate carrier for holding at least one substrate,

(b) a first means operable to engage and slide relative to the

carrier and including means to establish electrical R.F. connection at two or more points on the substrate, and





(c) a second means operable to engage and slide relative to the carrier and including means for testing the performance of the substrate.

4,365,196

PROXIMITY SENSING TRANSDUCER WITH SIMULATION MEANS

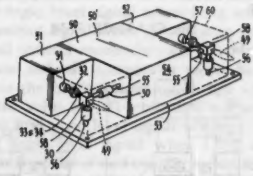
Colin M. Finch, Box 553, Lavington, New South Wales, Australia (2641)

Filed December 12, 1978, Ser. No. 968,847

Claims priority, application Australia, December 14, 1977, PD2772

Int. Cl.³ G01B *7/14*; G01R *35/00*

U.S. Cl. 324—207 **4 Claims**



1. A transducer for detecting information as to an article in proximity thereof, comprising:

a field creating coil for creating a field,

sensing means comprising a pick-up coil positioned to be within the field and responsive to changes in the field such that when the field is disturbed by the proximity of the article, the sensing means provides information as to the article, said field creating coil including two parts, one part being positioned around an elongate core and the other part being similarly positioned on another elongate core, the longitudinal axes of both of said cores being at right angles to one another, and wherein said pick-up coil is positioned around a further elongate core, said further core being at right angles to both of the other cores with all core axes intersecting, so that the pick-up coil is situated in a field strength minimum created by the interaction of the fields emanating from the parts of said field creating coil, and

a field disturbing coil having two parts, one part being mounted co-axially with said pick-up coil at a position where the field has minimum strength when an article is not in proximity to the transducer and the other part being at a position other than where the field has minimum strength and wherein said parts of said field disturbing coil are electrically interconnected with a resistance and a switch so that when the switch is closed the field is redistributed and the voltage induced in the pick-up coil changes, thereby simulating the presence of an article.

4,365,197

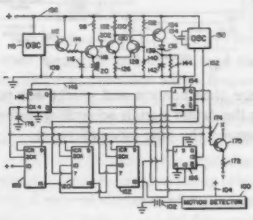
IDENTIFICATION OF PIPE MATERIAL IN WELLS

Lawrence A. Pyatt, 755 E. Date St., Brea, Calif. 92621, and Robert W. Thompson, 5210 Ensley Ct., Riverside, Calif. 92505

Continuation-in-part of Ser. No. 892,284, Mar. 31, 1978, abandoned. This application 1980, Ser. No. 119,171

Int. Cl.³ G01N *27/72, 27/82*

U.S. Cl. 324—221 **13 Claims**



5. In an instrument whose purpose is to distinguish whether a given position is within a magnetic or non-magnetic but metallic section of pipe, in combination:

(a) a coil disposed in a non-magnetic, metallic enclosure and energizable to create a magnetic field;

(b) energizing means for energizing said coil sufficiently at a frequency to create a magnetic field on which the pipe can exercise the effect of causing circulating current to flow in said non-magnetic but metallic section;

(c) means for measuring change in at least one of the current through said coil and the voltage across said coil as an incident to the flow of such circulating currents while said coil is stationery;

(d) said coil being encased in a metallic but non-magnetic housing; and

(e) said energizing means being effective to energize said coil at a frequency between 275 Hz and 350 Hz.

4,365,198

METHOD AND APPARATUS FOR DETECTING, CLASSIFYING AND MARKING DEFECTS IN WORKPIECE WITH IMPROVED TIMING CONTROL

James M. Toth, Lyndhurst, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed March 6, 1980, Ser. No. 127,579

Int. Cl.³ G01N *27/72*; G01R *33/00*

U.S. Cl. 324—226 **3 Claims**

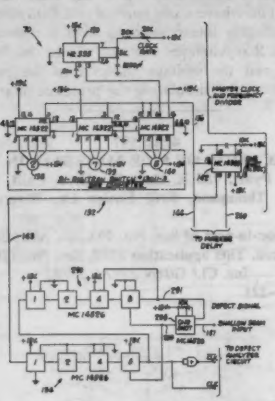
1. In a workpiece classifying and marking system including a test head for generating defect signals from a workpiece which both rotates and traverses past said test head, an improved timing control circuitry comprising:

(a) a single pulse generator for generating a series of regularly occurring pulses;

(b) means for receiving said regularly occurring pulses and producing a first series of output pulses with an adjustable frequency related to the speed of workpiece rotation and coupled to a workpiece marking control to coordinate workpiece marking with rotation; and

(c) divider means coupled to the first series of output pulses

for generating a second series of output pulses with a frequency greater than the frequency of workpiece rotation and coupled to a classifying circuit to coordinate



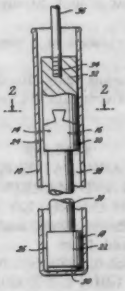
workpiece classification and workpiece rotation by categorizing the defect signals according to the position of the defect around the pipe circumference.

4,365,199

NUCLEAR MAGNETIC RESONANCE SAMPLE TUBE INSERT

Douglas S. McNair, Houston, Tex., assignor to Baylor College of Medicine, Houston, Tex.

Filed April 6, 1981, Ser. No. 251,642
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—318 **7 Claims**



1. An insert for insertion into a circularly cross-sectioned sample tube for use in nuclear magnetic resonance spectrometry comprising,

two spaced end plugs, said plugs having arcuate sides to be positioned in a heat exchange relationship adjacent the inner surface of sample tube when inserted therein,

said end plugs having venting means for allowing the passage of fluids when the insert is moved into a sample tube having a sample,

an elongate circular rod positioned between and connected to said end plugs, and

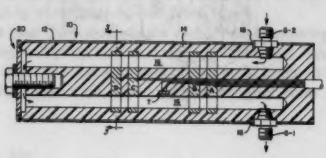
said end plugs and rod being of beryllium oxide.

4,365,200

SELF ALARMING FOUR DOUBLE ELECTRODES CONDUCTIVITY CELL

Herbert Goldsmith, Rockville, Md., assignor to Chemed Corporation, Cincinnati, Ohio

Filed July 14, 1980, Ser. No. 167,896
Int. Cl.³ G01N *27/42*
U.S. Cl. 324—449 **10 Claims**



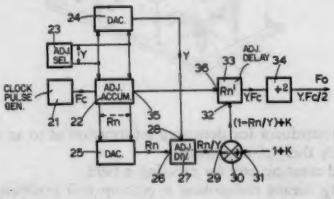
1. A conductivity cell comprising a pair of voltage electrodes arranged within a pair of current electrodes, with all of said electrodes being arranged seriatim in the direction of flow through the cell, each of said electrodes comprises at least two flow openings, all four of said electrodes being arranged in said cell with their openings in such relation to each other so as to thereby define two flow passageways in said cell, means to connect said two passageways into flow communication with each other to thereby define a single "U" shaped flow passageway through said cell, said single "U" shaped passageway thereby having a functional length equal to about twice the length of said cell, said single "U" shaped passageway passing through each of said electrodes at least twice via said at least two openings in each of said electrodes, means to permit flow into and out of said cell, and said flow permitting means being located in said cell in spaced relation to said passageway connecting means to said electrodes.

4,365,201

FREQUENCY SYNTHESIZER

Richard I. H. Scott, Redhill, and Michael J. Underhill, Horsham, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed October 14, 1980, Ser. No. 196,406
Claims priority, application United Kingdom, October 30, 1979, 7937487
Int. Cl.³ H03L *7/18*
U.S. Cl. 328—14 **4 Claims**



1. A frequency synthesizer of the type which selects pulses from a clock pulse source, of higher pulse frequency Fc than the required output frequency Fo, in order to provide said frequency Fo; the synthesizer including an adjustable accumulator which, for each input clock pulse thereto, adds a preselected adjustable increment Y to the accumulated value in the accumulator and gives an output pulse each time an accumulated value C, in which C is equal to or greater than Y, is reached or exceeded, any excess being left as a residue Rn in the accumulator, characterized in that the synthesizer further comprises adjustable delay means coupled to said adjustable accumulator output for delaying each output pulse n from the accumulator, said delay means having a control input coupled to said accumulator for accessing the residue Rn therein,

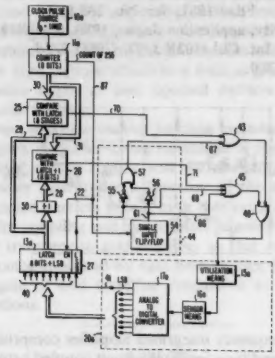
whereby the amount each output pulse n from the accumulator is delayed is a function of the residue Rn in the accumulator immediately after that output pulse.

4,365,202

DUTY CYCLE GENERATOR WITH IMPROVED RESOLUTION

Joseph O. Sinniger, Pennington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed August 25, 1980, Ser. No. 180,903
Int. Cl.³ H03K *5/05, 7/08*
U.S. Cl. 328—58 **9 Claims**



1. A digitized duty cycle pulse generator comprising:
means for generating a clock pulse signal having a repetition rate f_c;
counter means responsive to said clock pulse signal to cycle iteratively through a count of n;
storage means for storing a variable binary value m where $m<n$, where m can have a fractional value, and where m/n is the pulse duty cycle; and
logic means comprising comparator means responsive to the instantaneous count l in said counter means and the value m in said storage means when m is not an integer to produce a first logic level signal when $l<m$ and a second logic level output signal when $l>m$ during first selected cycles of said counter means through said count of n;
said logic means and said comparator means being further responsive to the instantaneous count l in said counter means and the value $(m+1)$ when m is not an integer to produce said first logic level signal when $l<(m+1)$ and said second logic level signal when $l>(m+1)$ during second selected cycles of said counter means through said count of n, and where said first and second selected cycles of said counter means are interleaved in a predetermined pattern.

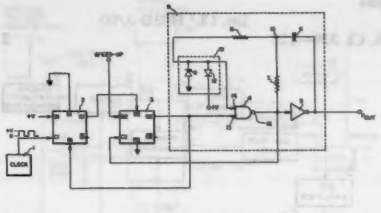
4,365,203

MULTI-FREQUENCY CLOCK GENERATOR WITH ERROR-FREE FREQUENCY SWITCHING

Donald V. DiMassimo, and John B. May, both of Liverpool, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed 1981, Ser. No. 231,698
Int. Cl.³ H03L *7/00;* **H03K** *5/00, 19/007*
U.S. Cl. 328—63 **6 Claims**

1. A dual frequency clock generator selectively providing output clock signals at first and second frequencies, comprising:
a source of input clock signals;
a first bistable switching circuit including an input and an output, a reset means for establishing a predetermined logic state at the circuit output, and clock input means coupled to said source of input clock signals for reproducing at the circuit output the logic level on the circuit input upon the occurrence of each positive voltage transition of said input clock signal;
a second bistable switching circuit substantially identical to said first circuit further including set means coupled to the output of said first circuit for setting the output of said second circuit to the logic level on the output of said first circuit, the output of said second circuit also being coupled to said reset means of said circuit, and the input of said second circuit being provided with a frequency select signal for selecting said first or second frequencies; and
an RC oscillator coupled to the output of said second circuit, said RC oscillator including means coupled to the clock input means of said second circuit for reproducing at the output of said second circuit said frequency select signal in response to which said clock generator produces an output clock signal at said first or second frequency.

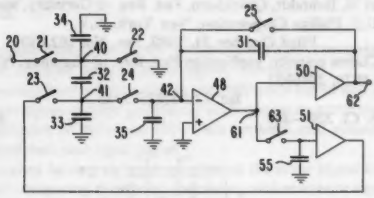


4,365,204

OFFSET COMPENSATION FOR SWITCHED CAPACITOR INTEGRATORS

Yusuf A. Haque, San Jose, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed September 8, 1980, Ser. No. 185,356
Int. Cl.³ G06G *7/18*
U.S. Cl. 328—127 **7 Claims**



1. An integrator having an integrator input terminal for receiving an input voltage to be integrated and an integrator output terminal, comprising:
an operational amplifier having an inverting input terminal, a non-inverting input terminal connected to a reference potential, and an output terminal, said operational amplifier producing an offset output voltage on said output terminal;
a capacitor connected between the inverting input terminal and the output terminal of said operational amplifier;
switched capacitor means connected between said inverting input terminal and said integrator input terminal; and
means for eliminating the effect of said offset output voltage on said integrator output terminal, said means for eliminating comprising means for storing a stored voltage equal to said input voltage to be integrated minus said offset output voltage and means for applying said stored voltage to said inverting input terminal of said operational amplifier,

whereby said input voltage is integrated and said offset output voltage is not integrated.

4,365,205

DEMODULATOR FOR SIGNAL WHICH IS FREQUENCY MODULATED BY DIGITAL DATA

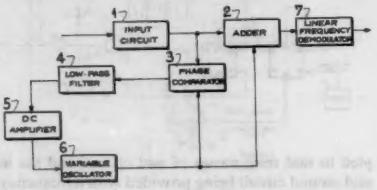
Jean P. Dehaene, Paris, France, assignor to Thomson-CSF, Paris, France

Filed December 9, 1980, Ser. No. 214,661

Claims priority, application France, December 27, 1979, 79 31804

Int. Cl.³ H03D *3/00*

U.S. Cl. 329—122 2 Claims



1. A device for demodulating a modulated signal resulting from frequency modulation of a carrier by a digital data item and having a spectral line at the carrier frequency, wherein said device comprises:

an adder circuit having a first input for receiving the modulated signal, a second input and an output,

carrier recovery means for receiving the modulated signal and having one output coupled to the second input of the adder circuit;

and a linear frequency demodulator having one input coupled to the output of the adder circuit.

4,365,206

DIFFERENTIAL AMPLIFIER

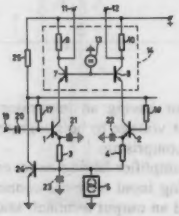
Karl H. Rehfeldt, Quickborn, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed October 31, 1980, Ser. No. 202,810

Claims priority, application Fed. Rep. of Germany, November 21, 1979, 2946952

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—260 4 Claims



1. A differential amplifier comprising:

two transistors connected by means of their emitters, each of said transistors having an emitter resistor connected in series to a current source, the other side of said current source being connected to a ground terminal of a supply source, the bases of said transistors being connected by means of a current supply impedance to the positive terminal of said supply source, the control of said differential amplifier being effected by a signal applied to a base electrode of one of said two transistors;

a network circuit, a symmetrical output signal being taken from said network circuit which is connected to the collector-branches of said two transistors, and;

said differential amplifier further comprising a third transistor whose base is connected to the junction point of said emitter resistors of said two transistors, said third transistor being connected between the base branch of at least one of said two differentially connected transistors and the ground terminal of said supply source.

4,365,207

INTEGRATED HIGH FREQUENCY AMPLIFIER

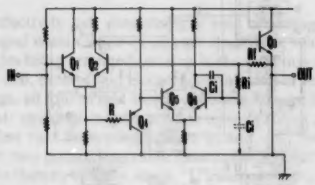
Satoshi Fukuchi, Tachikawa, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed 1981, Ser. No. 233,117

Claims priority, application Japan, 1980, 55-18819

Int. Cl.³ H03F *3/45;* G06G *7/18*

U.S. Cl. 330—260 5 Claims



1. A high frequency integrated amplifier comprising:

a low pass band type feedback circuit coupled between input and output terminals of said high frequency amplifier, said feedback circuit including a first resistor and a capacitor which act as a Miller integrating circuit;

said Miller integrating circuit comprises a differential amplifier;

a first transistor operating as an emitter follower the emitter terminal of said first transistor being coupled to the base terminal of a second transistor, said second transistor being part of said differential amplifier;

the base terminal of said first transistor being coupled through a second resistor to the emitter terminal of a third transistor, said third transistor being coupled to a feedback terminal of said high frequency amplifier.

4,365,208

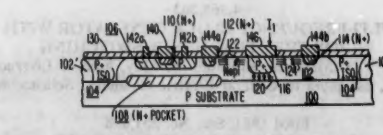
GAIN-CONTROLLED AMPLIFIER USING A CONTROLLABLE ALTERNATING-CURRENT RESISTANCE

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed April 23, 1980, Ser. No. 143,033

Int. Cl.³ H03G *3/18;* H03F *3/14, 3/45*

U.S. Cl. 330—278 10 Claims



1. A controlled resistance system for use with a signal amplifier, comprising:

a source of variable control current; and

a vertical PNP transistor including a base-emitter junction which exhibits a resistance, the magnitude of which is controlled by said control current, said vertical PNP transistor including

a semiconductor substrate of P type conductivity semi-

conductor material having a substantially planar surface;

a first localized region of high resistivity N type semiconductor material located in said substrate adjacent to the surface thereof and exhibiting a given carrier lifetime characteristic;

a second localized region of P+ type conductivity located in said high resistivity region adjacent to said surface, and coupled to receive control current from said source, wherein control current flow in said P+ type region injects a flow of carriers into said high resistivity region;

a third localized region of N+ type conductivity located in said high resistivity region and separated from said second localized region by an intervening expanse of said high resistivity N type semiconductor material to establish a separation distance beteen said N+ type and P+ type regions which is at least as great as the penetration depth of said injected carriers at said given carrier lifetime,

wherein said base-emitter junction includes said N+ type region, said intervening expanse of N type material, and said P+ type region, and the resistance of said base-emitter junction is a function of the density of said injected carriers in said high resistivity region; and

means for coupling said base-emitter junction of said vertical PNP transistor to said amplifier so that variations in the resistance exhibited by said base-emitter junction render the gain of said amplifier responsive to said resistance variations.

4,365,209

IMPEDANCE TRANSDUCER

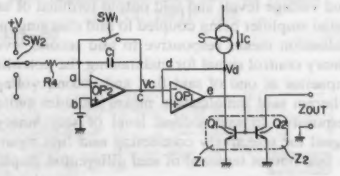
Satoshi Yamauchi, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed March 19, 1980, Ser. No. 131,875

Claims priority, application Japan, March 23, 1979, 54-34093; March 23, 1979, 54-34094

Int. Cl.³ H03F *3/08*

U.S. Cl. 330—308 11 Claims



1. A variable impedance circuit, comprising:

first and second transistors mounted on a common thermally conductive substrate so that said transistors remain at substantially the same temperature, each transistor having two main electrodes and a control electrode means, said transistors exhibiting essentially the same electrical characteristics at said electrodes;

a negative feedback amplifier having an input terminal and connected in circuit with said first transistor to vary the impedance between the main electrode means of said first transistor in a predetermined manner in accordance with an impedance control signal applied to said input terminal;

a memory circuit coupled to said input terminal of said negative feedback amplifier for setting said impedance control signal at a desired value; and

means for maintaining essentially the same electrical condition at each of said control electrode means, so that the impedance presented between the main electrodes of the second transistor is essentially equal to the impedance between the main electrodes of said first transistor.

4,365,210

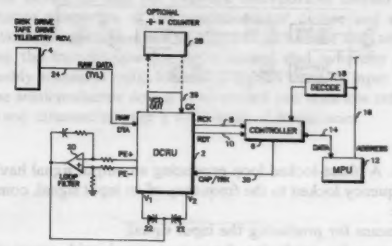
DATA AND CLOCK RECOVERY SYSTEM HAVING A PHASE-LOCKED-LOOP AND WHICH CONTROLS DYNAMIC LOOP RESPONSE OF A DATA STREAM OF UNKNOWN DATA FORMAT

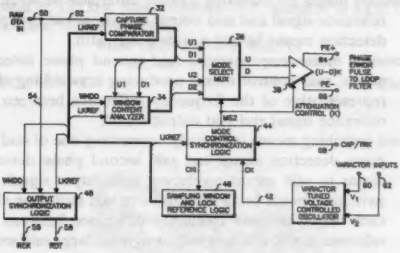
Wayne D. Harrington, and Stanley E. Groves, both of Round Rock, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed June 26, 1980, Ser. No. 163,380

Int. Cl.³ H03L *7/10*; H03D *3/18*

U.S. Cl. 331—1 A 16 Claims





1. A phase-lock-loop circuit for generating a reference signal which is in phase with an input signal, comprising:

comparing means for receiving said reference signal and said input signal and for generating at an output an error signal indicative of the phase difference between said reference signal and said input signal;

first means having an input coupled to the error signal from said comparing means for generating said reference signal, said first means being responsive to said error signal for bringing said reference signal into phase with said input signal;

second means coupled between the output of said comparing means and the input of said first means for inhibiting said error signal if said input signal occurs either earlier or later than a predetermined interval of time; and

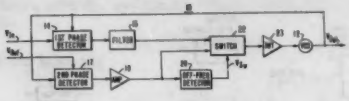
third means coupled to said comparing means and to said second means for generating a window during which receipt of an input signal which is out of phase with said reference signal will result in the generation of said error signal, the duration of said window corresponding to said predetermined interval of time wherein said input signal is one of a plurality of input pulses, said reference signal is one of a plurality of reference pulses, said window corresponds to a first state of a window signal capable of alternately assuming first and second states and wherein said error signal corresponds to a plurality of error pulses one of which is generated each time out-of-phase input and reference pulses are received during said first state.

4,365,211

PHASE-LOCKED LOOP WITH INITIALIZATION LOOP

Ronald L. Lee, Reno, Nev., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed October 31, 1980, Ser. No. 202,554
Int. Cl.[3] H03L 7/10
U.S. Cl. 331—11 15 Claims



1. A phase-locked loop producing an output signal having a frequency locked to the frequency of an input signal, comprising:

means for producing the input signal;

means for producing the output signal, said output signal having a variable frequency;

first means for detecting a phase difference between said input signal and said output signal, said first phase detection means having a narrow bandwidth;

means for producing a reference signal;

second means for detecting a phase difference between said reference signal and said output signal, said second phase detection means having a wide bandwidth;

control means responsive to said second phase detection means, said control means producing a switching signal representative of the frequency difference between said reference signal and said output signal;

and switching means selectively connecting one of said first phase detection means and said second phase detection means to said means producing said output signal, said switching means being responsive to said switching signal such that when said frequency difference between said reference signal and said output signal is large said second phase detection means is connected to said means producing said output signal.

11. A phase-locked loop for recovering an informational signal from a received signal, comprising:

means for producing a regenerated pilot tone;

demodulation means responsive to both the received signal and said regenerated pilot tone, said demodulation means recovering both the informational signal and a recovered pilot tone from said received signal;

first means for detecting a phase difference between said recovered pilot tone and a first reference signal;

filtering means responsive to said first phase detection means;

second means for detecting a phase difference between a second reference signal and said regenerated pilot tone, said second phase detection means having a wide bandwidth;

control means responsive to said second phase detection means, said control means producing a switching signal representative of the frequency difference between said second reference signal and said regenerated pilot tone;

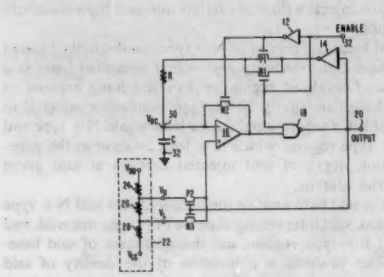
and switching means selectively connecting one of said means for filtering and said second phase detection means to said means producing said regenerated pilot tone, said switching means responsive to said switching signal such that when said frequency difference between said second reference signal and said regenerated pilot tone is large said second phase detection means is connected to said means producing said regenerated pilot tone.

4,365,212

GATED OSCILLATOR INCLUDING INITIALIZATION APPARATUS FOR ENHANCING PERIODICITY

Carmine Gentile, Hightstown, and Nicholas Kucharewski, Lebanon, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed September 30, 1980, Ser. No. 192,364
Int. Cl.[3] H03K 3/03
U.S. Cl. 331—111 4 Claims



1. An oscillator comprising:

a capacitor;

charging means for alternately charging said capacitor substantially to a first voltage level and discharging said capacitor substantially to a second voltage level;

gating means for selectively enabling said charging means to charge and discharge said capacitor responsive to a first level of binary control signal so as to condition said oscillator to oscillate, and for selectively disabling said charging means responsive to a second level of said binary control signal so as to condition said oscillator not to oscillate;

a differential amplifier having first and second input terminals and an output terminal, said first input terminal of said differential amplifier being connected to said capacitor, said second terminal of said differential amplifier being coupled for receiving alternate ones of said first and second voltage levels and said output terminal of said differential amplifier being coupled to said charging means; and

initialization means responsive to said second level of said binary control signal for maintaining the potential on said capacitor at one of said first and second voltage levels; wherein said initialization means includes switch means responsive to said second level of said binary control signal for selectively connecting said first input terminal to said output terminal of said differential amplifier.

4,365,213

LOW FREQUENCY ASTABLE OSCILLATOR HAVING SWITCHABLE CURRENT SOURCES

Kenneth A. Hansen, Bedford, Tex., and Ronald H. Chapman, Wheaton, Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed October 16, 1980, Ser. No. 197,386
Int. Cl.[3] H03K 3/282; H03B 5/36
U.S. Cl. 331—113 R 4 Claims

1. A low frequency oscillator of the astable type comprising:

first switching transistor means having emitter, base and collector electrodes;

second switching transistor means having emitter, base and collector electrodes;

said emitter electrodes of said first and second switching transistor means coupled to a predetermined DC reference level;

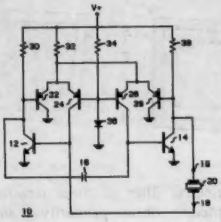
the base electrode of the first transistor means adapted to be connected to the collector electrode of the second transistor means through a frequency determining element;

capacitive means cross-coupling the base electrode of the

second transistor means to the collector electrode of the first transistor means;

first switchable current source means coupled to the base electrode of said first switching transistor means to supply base drive to the first switching transistor means and to provide charging current to the frequency determining element;

second switchable current source means coupled to the base electrode of the second switching transistor means to supply base drive to the second switching transistor means



and to provide charging current to the cross-coupling capacitive means; and

said first and second switchable current source means respectively including first and second differential amplifier means, a first input of each of the respective differential amplifier means referenced to a reference voltage, a second input of the first differential amplifier means coupled to the collector electrode of the first switching transistor means, and a second input of the second differential amplifier means coupled to the collector electrode of the second switching transistor means.

4,365,214

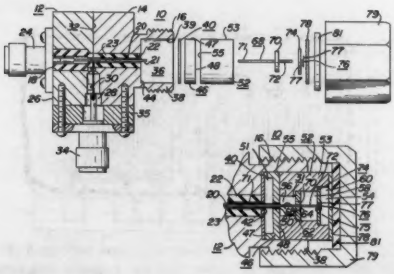
SEMICONDUCTOR MOUNTING AND MATCHING ASSEMBLY

Robert W. Shillady, North Wales, Pa., assignor to American Electronic Laboratories, Inc., Colmar, Pa.

Filed September 24, 1980, Ser. No. 190,464

Int. Cl.³ H01P *5/08*

U.S. Cl. 333—33 **30 Claims**



1. A semiconductor mounting and matching assembly comprising a radio-frequency transmission line operating principally in the TEM mode having a first end for receiving radio-frequency signals with a given first characteristic impedance, a second end with a second characteristic impedance, and a plurality of sections between its first and second ends having configurations and discontinuities providing reactive elements, a semiconductor device mounted at the second end of the transmission line having an impedance which differs from the first characteristic impedance of the transmission line and providing a load resistance terminating the transmission line at its second end, and a network which transforms the impedance between the first and second ends of the transmission line and matches the load resistance of the semiconductor device to the first characteristic impedance comprising the reactive elements provided by the sections of the transmission line and the capacitive and inductive reactance properties provided respectively by the junction capacitance and connecting lead means of the semiconductor device at the second end of the transmission line, the reactive elements of the transmission line at its second end accommodating the reactance properties of the semiconductor device so that the network incorporates therein the reactance properties of the semiconductor device and such reactance properties are not an effective part of the load terminating the transmission line at its second end, whereby said assembly transmits radio-frequency signals from its input end to the semiconductor device at its second end with low reflection and attenuation over a wide-band of frequencies.

4,365,215

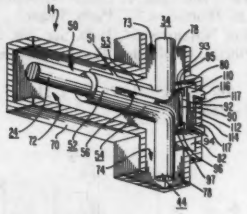
HIGH POWER COAXIAL POWER DIVIDER

Norman R. Landry, Mount Laurel, N.J., assignor to RCA Corporation, New York, N.Y.

Filed 1981, Ser. No. 226,711

Int. Cl.³ H01P *5/12*

U.S. Cl. 333—127 **9 Claims**



1. A coaxial transmission line coupling structure for connecting a common port to n branch ports where n is an integer greater than 1, said structure designed for operation over a predetermined frequency band, said structure comprising:

an inner conductor system including a common leg and n branch legs extending from a common junction with said common leg;

an n terminal resistance element for dissipating odd mode power and for isolating said n branch ports from each other, each of said n terminals connected to an associated branch leg at a distance from said common junction of approximately one quarter wavelength at a frequency in said band;

an outer conductor enclosing said inner conductor system;

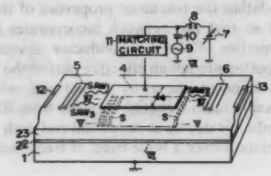
a thermally conducting dielectric heat sink coupled between said resistance element and said outer conductor for conducting heat away from said resistance element; and

said outer conductor and said heat sink being configured to form a region of a lower dielectric constant than said heat sink between said resistance element and said outer conductor to provide a lower capacitance between said resistance element and said outer conductor than would be provided in the absence of said lower dielectric constant region.

4,365,216
SURFACE-ACOUSTIC-WAVE DEVICE

Shoichi Minagawa; Takeshi Okamoto, and Takamasa Sakai, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed 1981, Ser. No. 223,059
Claims priority, application Japan, 1980, 55-2601
Int. Cl.³ H03F 7/04; H03H 9/145
U.S. Cl. 333—153 11 Claims

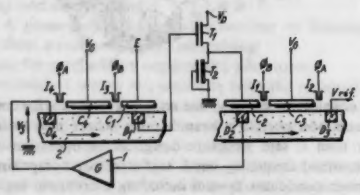


1. A surface-acoustic-wave device which comprises:
a laminate formed of a piezoelectric layer and a semiconductor layer;
a plurality of metal strips disposed on a propagation path of surface acoustic wave in said laminate;
a pumping electrode disposed on said piezoelectric layer and on said propagation path of surface acoustic wave; and
a means for applying a pumping voltage to said pumping electrode;
each of said metal strips having a portion extending to said semiconductor layer in a region out of said propagation path of surface acoustic wave.

4,365,217
CHARGE-TRANSFER SWITCHED-CAPACITY FILTER

Jean L. Berger, and Jean L. Coutures, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed November 24, 1980, Ser. No. 210,141
Claims priority, application France, November 30, 1979, 79 29506
Int. Cl.³ H03H 19/00; G11C 27/02
U.S. Cl. 333—165 11 Claims

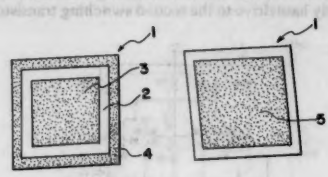


1. A charge-transfer switched-capacity filter, comprising an amplifier associated with a network of resistances and capacities in which each resistance is formed by two MOS switches in series and with a capacity between the common point of these switches and ground; said capacities are formed by MOS technology and said MOS switches are formed by control electrodes adjacent the MOS capacities and from which they are separated by an oxide layer; one plate of each capacity being formed by the semiconductor substrate on which it is integrated, and connection between two capacities whose plates are formed by the substrate are periodically connected by transfer of charges in the semiconductor substrate on which said two capacities are integrated, and results in the establishment of the same surface potential under said two capacities; the other external to the substrate plate of at least one of the capacities receiving input voltage of the filter, and of at least another of the capacities receiving a DC voltage taken for reference.

4,365,218
THREE TERMINAL TYPE PIEZOELECTRIC FILTER

Jiro Inoue, Kanazawa, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed 1981, Ser. No. 232,403
Claims priority, application Japan, 1980, 55-17263
Int. Cl.³ H03H 9/15, 9/54
U.S. Cl. 333—187 12 Claims

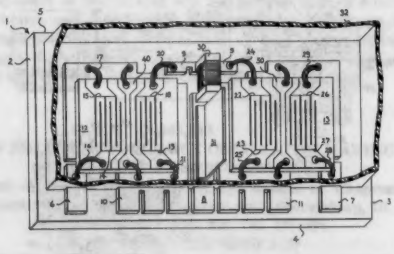


1. A piezoelectric filter of three terminal type which is especially adapted to vibrate primarily in an expansion mode, said filter comprising:
a piezoelectric substrate having first and second opposed main surfaces;
an input electrode and an output electrode respectively provided on said first main surface of said piezoelectric substrate; and
a common electrode provided on said second main surface of said piezoelectric substrate, said common electrode confronting less than the entire said output electrode through said piezoelectric substrate whereby spurious edge mode vibrations which would otherwise be excited are suppressed.

4,365,219
IN-LINE SURFACE ACOUSTIC WAVE FILTER ASSEMBLY MODULE AND METHOD OF MAKING SAME

Bernard D. Nathan, Liverpool, N.Y., assignor to General Electric Company, Lynchburg, Va.

Filed 1981, Ser. No. 238,758
Int. Cl.³ H03H 9/64, 9/05, 9/25
U.S. Cl. 333—193 10 Claims



4. A surface acoustic wave (SAW) filter assembly module including improved isolation means comprising:
a. an insulative substrate having oppositely disposed input and output ends and oppositely disposed terminal and non-terminal sides;
b. a plurality of discrete mutually isolated electrically conductive areas on a surface of said substrate including:
1. a first area located adjacent the input end and said terminal side of said surface;
2. a second area located adjacent the output end and said terminal side of said surface;
3. a third area located between said first and second areas

and including a portion thereof adjacent said terminal side of said surface;

4. a fourth area located between said third area and said non-terminal side of said surface and including oppositely disposed input and output portions and an intermediate portion;

5. a fifth area located between said first and third areas and including a portion adjacent said terminal side of said surface;

6. a sixth area located between said second and third areas and including a portion adjacent said terminal side of said surface;

c. first and second surface acoustic wave filter devices, each having input and output signal electrodes and input and output ground electrodes; said first device being positioned over and secured to each of said first and fifth areas; said second device being positioned over and secured to each of said second and sixth areas;

d. means electrically connecting:

1. said first area to said input signal electrode;

2. said fifth area to said input ground electrode;

3. said input portion of said fourth area to said output signal electrode;

4. said fifth area to said output ground electrode of said first device;

e. means electrically connecting;

1. said sixth area to said input ground electrode;

2. said output portion of said fourth area to said input signal electrode;

3. said sixth area to said output ground electrode;

4. said second area to said output signal electrode of said second device; and

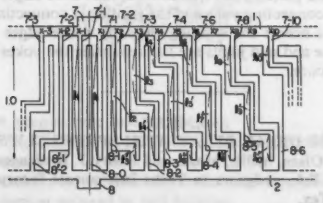
f. an electrically conductive shield electrically connected to said third area and positioned between said devices for blocking radiative signals therebetween.

4,365,220

SURFACE WAVE CIRCUIT DEVICE

Mitsutaka Hikita, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed March 20, 1981, Ser. No. 245,748
Claims priority, application Japan, March 24, 1980, 55-36072
Int. Cl.³ H03H *9/64, 9/25*
U.S. Cl. 333—195 **9 Claims**



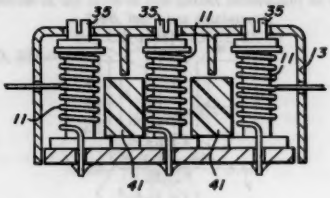
1. A surface wave circuit device having a plurality of stripes arranged along a surface wave propagating substrate in a direction normal to a direction of propagation of a surface wave, said stripes being arranged at a fixed spacing from one another along the direction of propagation of a surface wave, wherein each of said stripes has an effective length in the direction normal to said direction of propagation which effective length contributes to the propagation of said surface wave, said effective length for each said stripe being determined as a function of the distance of each said stripe along said direction of propagation from an input point of said surface wave to said plurality of stripes, and further wherein said stripes are arranged such that a total number of stripes in said direction of propagation is substantially constant for any cross-section of said surface wave circuit device taken in said normal direction.

4,365,221

HELICAL RESONATOR FILTER WITH DIELECTRIC APERTURES

Peter Vizmuller, Thornhill, Canada, assignor to Motorola Canada Limited, Willowdale, Canada

Filed March 30, 1981, Ser. No. 248,911
Int. Cl.³ H01P *1/20, 7/00*
U.S. Cl. 333—202 **3 Claims**



1. A helical resonator filter comprising:

a plurality of conductive helical coils;

a conductive shell having a plurality of cavities, each cavity including one of said helical coils and separated by conductive walls, the wall between adjacent cavities having an aperture for providing electromagnetic coupling between adjacent helical coils; and

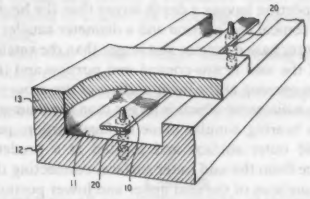
a dielectric member inserted in each of the apertures to increase the electromagnetic coupling between adjacent helical coils.

4,365,222

STRIPLINE SUPPORT ASSEMBLY

Norman R. Lampert, Lantana, Fla., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed April 6, 1981, Ser. No. 251,243
Int. Cl.³ H01P *3/08*
U.S. Cl. 333—238 **6 Claims**



1. A stripline transmission assembly for conducting microwave energy propagating at a predetermined frequency, said assembly comprising

a channel (11) having a flat bottom (16) with at least one blind hole (30) therein and parallel planar sidewalls (17,18) substantially perpendicular to said flat bottom;

a metallic conductor (10) of predetermined thickness and width disposed in a predetermined position in said channel and having at least one second hole which extends completely through said conductor thickness, the diameter at said second hole being substantially less than the width of said conductor;

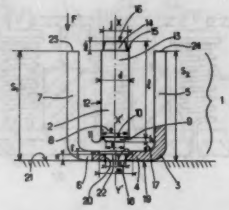
at least one support post (20) which maintains said conductor at said predetermined position, each post extending from one of said holes completely through one of said second holes and ending at a location substantially aligned with the extending ends of said sidewalls, said post being fabricated from a dielectric material having a radio frequency loss characteristic close to that of air at said predetermined frequency; and

a planar cover (13) extending between the parallel sidewalls of said channel.

4,365,223
MAGNETIC CIRCUIT

Louis J. M. Fechant, Le Vesinet; Lucien Siffroi, Versailles, and Jean M. Anguille, St. Germain en Laye, all of France, assignors to La Telemecanique Electrique, France

Filed April 7, 1981, Ser. No. 252,490
Claims priority, application France, April 10, 1980, 80 08036
Int. Cl.[3] H01F 3/00
U.S. Cl. 335—281 4 Claims



1. A process for manufacturing an electro-magnet magnetic circuit comprising a U or L-shaped massive magnet yoke having a cross-piece and least one arm substantially at right angles to the cross-piece, and a cylindrical elongated core mounted on said cross-piece and extending in a direction substantially parallel to said arm, said process comprising the steps of:

(a) shaping the said core with, at a first end thereof, a frusto-conical end portion having a larger base diameter which is smaller than the diameter of the core, whereby a plane transverse annular stop surface is formed between the cylindrical outer surface of the core and the base of the frusto-conical end portion, and with, at the opposite end of the said core, a further plane transverse surface,

(b) shaping the said cross-piece with a cavity having lower and upper substantially cylindrical coaxial portions, the lower portion having a depth larger than the heigth of the frusto-conical end portion and a diameter smaller than the said larger base diameter and larger than the smaller diameter of the said frusto-conical end portion and the upper portion opening at the inner surface of the cross-piece and having a diameter which is larger than the diameter of the core, a bearing annular plane surface portion, parallel to the said outer surface and located at a predetermined distance from the said outer surface, connecting the cylindrical surfaces of the said upper and lower portions of the cavity;

(c) positioning the yoke with the outer surface of the cross-piece lying on a plane support member and positioning the core in a direction substantially at right angles with the cross-piece and with the smaller base of said frusto-conical end portion substantially located in the plane of the said bearing annular surface portion and coaxially located with respect to the said cavity;

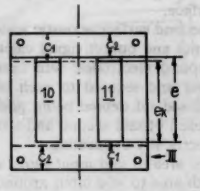
(d) translating the core in a direction substantially at right angles with the said outer surface of the cross-piece until the said stop surface of the core abuts against the said bearing surface portion of the cavity and simultaneously establishing an electric welding voltage across the core and the yoke for producing a local fusion and, consequently, a plastic deformation of the core at the said frusto-conical end portion and of the cross-piece at the said cavity;

(e) levelling of the end surface of the said arm remote from the cross-piece to form a plane polar surface substantially parallel to the said further plane polar surface of the core located at a predetermined distance from said further plane polar surface.

4,365,224
CORE LAMINATION FOR SHELL-TYPE CORES, PARTICULARLY FOR TRANSFORMERS

Bernhard Philberth, and Karl Philberth, both of Puchheim, Fed. Rep. of Germany, assignors to Wilfried Ernst Sawatsky, North Balwyn, Australia

Filed 1979, Ser. No. 953,100
Claims priority, application Switzerland, October 25, 1977, 12939/77; Fed. Rep. of Germany, December 10, 1977, 2755218
Int. Cl.[3] H01F 27/24
U.S. Cl. 336—212 9 Claims

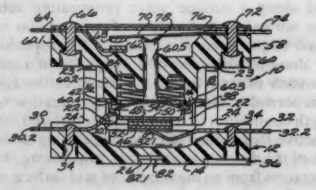


1. Core laminations for shell-type cores, particularly for transformers, comprising a plurality of said laminations alternatingly reversed, each of said core laminations being of two-piece EI construction comprising an E-part and an I-part, two of said I-parts being obtained from the window stampings of two E-parts stamped simultaneously with the legs pointing toward one another and having a center leg of substantially uniform width, and two yokes connecting the ends of said legs, said yokes being provided with inside edges facing the windows and joints being provided between one side of the center leg and between one side of the outer legs and the adjacent yoke for interleaving with a winding, and the other yoke having no joints with the center leg and the two outer legs, wherein the width (c_1) of the jointless connecting yoke is greater than the width (c_2) of the parted yoke ($c_1 > c_2$), and greater than half the center leg width ($c_1 > f/2$) and the width (b) of the two outer legs is greater than half the center leg width ($f/2$) ($b > f/2$) and wherein in said plurality of said laminations alternatingly reversed the inside edges of said parted yoke are spaced away from said winding in contrast to the inside edges of said jointlessly connecting yoke with the inside edges of said parted yoke spaced from the inside edges of said jointlessly connecting yoke and the jointlessly connecting yoke inner edges nearer the winding than the inside edges of said parted yoke and said joints are located inside the yokes of said shell-type core.

4,365,225
TIME DELAY RELAY WITH SPRING CLIPS

Donald A. Olsen, Millis, Mass., and Henry J. Boulanger, Cumberland, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 5, 1980, Ser. No. 146,979
Int. Cl.[3] H01H 37/52
U.S. Cl. 337—88 5 Claims



1. A time delay relay comprising a housing having an open-ended chamber and having a pair of terminals extending from

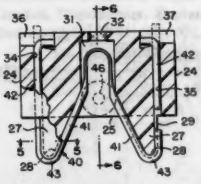
the chamber, a resistance heater having a metal cup and having a resistor of a material of positive temperature coefficient of resistivity secured with one side in electrically and thermally conductive relation to the cup, the heater being disposed in the chamber with the cup electrically engaging one terminal and with the opposite side of the resistor electrically engaging the other terminal for electrically energizing the heater, and switch means secured to the housing having contact means moveable between open and closed circuit positions, having thermally responsive means moveable with snap action when heated to a selected temperature, and motion transfer means moveable in response to the thermally responsive means for moving the contact means between said circuit positions, characterized in that, the switch means has a portion fitted into the open end of the housing engaging the heater cup for holding the heater in selected heat-transfer relation to the thermally-responsive switch means, the switch portion having boss means on opposite exterior surfaces thereof, and a pair of resilient metal clips have respective first hooked ends extending into the open chamber end engaging the boss means and have opposite ends engaging the housing to hold the switch means and housing in said assembled relation for moving the contact means to one of said circuit positions with a selected delay after energizing the heater.

4,365,226

PLUG-IN TYPE FUSE

Leon G. Barry, and Willis E. Rieman, both of Shelby, N.C., assignors to Fasco Industries, Inc., Boca Raton, Fla.

Filed 1981, Ser. No. 237,253
Int. Cl.³ H01H *85/02*
U.S. Cl. 337—198 **8 Claims**



1. A plug-in type fuse, comprising

an electrically non-conductive housing having therein a recess,

a continuous, substantially cylindrical one-piece wire fuse element secured to said housing,

said wire element being bent intermediate its ends to form a central section thereof which extends into said recess and a pair of spaced leg sections which extend from said central section to the exterior of said housing for insertion into a matching female fuse receptacle,

a portion of said central section of said element in said recess being non-cylindrical and reduced in cross sectional area as compared to the remaining portion of said element, and

rigid support means projecting from said housing and having therein shallow grooves in which said spaced leg sections are seated to be supported thereby for insertion into said receptacle,

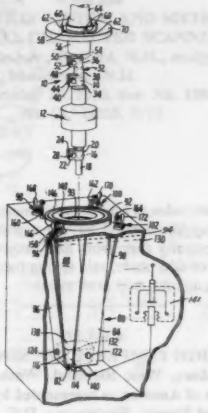
said leg sections having at least portions thereof projecting from said grooves to make electrical contact with contacts in said female receptacle, when said leg sections are inserted thereinto.

4,365,227

METHOD AND APPARATUS FOR FUSING ELECTRICAL POWER EQUIPMENT ENCLOSED IN A TANK AND SURROUNDED BY INSULATING FLUID

Frank C. Trayer, 25690 LaLanne Ct., Los Altos Hills, Calif. 94002

Continuation-in-part of Ser. No. 690,424, May 27, 1976, Pat. No. 4,170,000. This application September 27, 1979, Ser. No. 79,485
The portion of the term of this patent subsequent to October 2, 1996, has been disclaimed.
Int. Cl.³ H01H *85/22, 85/12*
U.S. Cl. 337—202 **11 Claims**



1. The method of mounting fuse means having a first ferrule and a second ferrule in a tank containing electrical power equipment surrounded by insulating fluid, comprising the steps of:

affixing to said first ferrule a conductor which passes through and is sealed to a cover for covering an opening in a wall of said tank;

passing said fuse means through said opening and into said insulating fluid; and

connecting said second ferrule to a connector suspended in and contacted by said insulating fluid while positiong said cover over said opening.

4,365,228

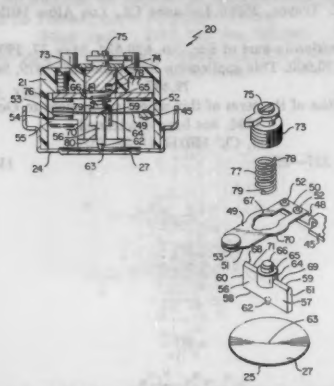
THERMOSTAT CONSTRUCTION HAVING A ONE PIECE PLUNGER WITH A WING-LIKE SECTION AND METHOD OF MAKING THE SAME

Paul M. Rowley, Bexley, Ohio, assignor to Robertshaw Controls Company, Richmond, Va.

Filed April 3, 1981, Ser. No. 250,576
Int. Cl.³ H01H *37/18*
U.S. Cl. 337—347 **16 Claims**

1. In a thermostat construction having a frame means carrying a fixed contact and a movable contact carried by a switch blade, a bimetallic snap disc carried by said frame means for controlling movement of said switch blade relative to said fixed contact in response to temperature setting means carried by said frame means for selecting the temperature of operation of said disc for moving said movable contact out of contact with said fixed contact, said blade having opening means passing therethrough, said temperature setting means comprising plunger means passing loosely through said opening means and engaging said snap disc, said temperature setting means having spring means operatively associated with said plunger means to urge said plunger means into engagement with said snap disc, said temperature setting means having adjusting means for adjusting the force of said spring means that urges said plunger

means into said engagement, the improvement wherein said plunger means comprises a one-piece member, said plunger means having a wing-like section provided with opposed ends, one end of said wing-like section being engageable with said



blade on opposite sides of said opening means thereof, said one end of said wing-like section having a post means extending substantially centrally therefrom and projecting through said opening means of said blade, said spring means having one end thereof bearing against said post means.

4,365,229

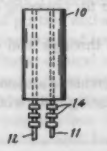
HIGH TEMPERATURE SENSOR

Richard D. Tokarz, West Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed 1981, Ser. No. 229,421

Int. Cl.³ H01C *7/04*

U.S. Cl. 338—25 **9 Claims**



1. A high temperature sensor for monitoring changes in temperature within a range of 1000–2000° K., comprising:

first and second electrical conductors each having a melting point above the temperature range to be monitored; said conductors being within a length of metal oxide sheathed cable; and

a mass of electrical insulating material separating the conductors, said mass of insulating material having a measurable resistivity change in relation to its temperature within the temperature range to be monitored.

4,365,230

LEAD SCREW TYPE VARIABLE RESISTOR

Steven Feldman, Seminole, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed August 24, 1981, Ser. No. 295,886

Int. Cl.³ H01C *10/40*

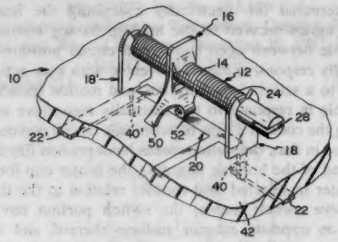
U.S. Cl. 338—180 **6 Claims**

1. A variable resistor comprising:

a lead screw with an integral resistance element;

a pair of mounts which rotatably carry said lead screw, said mounts being fixed to a substrate, at least one said mount providing electrical connection between said resistance element and a first circuit element;

a slider operatively engaging said lead screw and movable in response to rotation of said screw, said slider being in contact with said resistance element;



a second circuit element in said substrate which said slider moves along in response to rotation of said lead screw, said slider remaining in electrical contact with said second circuit element, whereby,

rotation of said lead screw will cause said slider to move along said resistance element, thereby varying the resistance between the first circuit element and the second circuit element.

4,365,231

VARIABLE RESISTOR DEVICE WITH LOCK MECHANISM

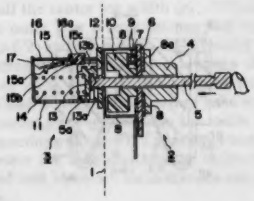
Matsuo Nishioka, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 13, 1981, Ser. No. 263,259

Claims priority, application Japan, May 16, 1980, 55-68020[U]

Int. Cl.³ H01C *10/32*

U.S. Cl. 338—334 **8 Claims**



1. A variable resistor device with a lock mechanism comprising a resistor housing portion, an operating rod mounted rotably and axially slidably in the housing portion, and a lock mechanism housing portion attached to one end of the resistor housing portion and provided with the lock mechanism for locking the operating rod, the lock mechanism housing portion comprising a box-shaped case, wherein:

the lock mechanism comprises a lock member axially movable in the case in response to the axial movement of the operating rod and a ratchet member rotatably provided on the case and having a pawl to be brought into contact with the lock member, the top surface of the lock member being provided close to one side thereof with an engagement projection having a V-shaped cutout remote from said one side for engagement with the pawl, the top surface of the lock member further being provided with a pawl passage around the engagement projection with its entrance end and exit end facing said one side, the exit end being positioned above the entrance end, whereby the pawl is guided through the pawl passage from the entrance end to the V-shaped cutout and from the cutout to

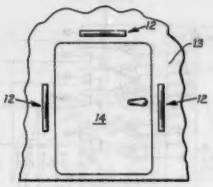
the exit end to lock and release the operating rod in response to the axial movement thereof.

4,365,232

EMERGENCY LIGHTING UNIT

George R. Miller, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed March 23, 1981, Ser. No. 246,781
Int. Cl.³ G08B 5/36, 21/00
U.S. Cl. 340—27 R **2 Claims**



1. In an aircraft, at least one emergency lighting unit mounted to a bulkhead by standoff brackets to serve as an evacuation light and a handle, said lighting unit comprising,

a casing formed by a flat metallic heat sink and a translucent cover,

an electroluminescent lamp fixed to said translucent cover,

alternating current means within said casing for illuminating said electroluminescent lamp, and

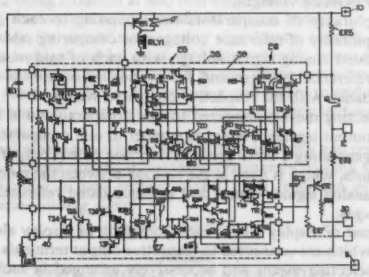
circuit means for connecting said alternating current means to said elec.roluminescent lamp.

4,365,233

DIRECTION INDICATOR SYSTEMS FOR VEHICLES

Raymond P. Halmshaw, Redditch, England, assignor to Lucas Industries Limited, Birmingham, England

Filed April 20, 1981, Ser. No. 255,938
Int. Cl.³ B60Q 1/34
U.S. Cl. 340—73 **11 Claims**



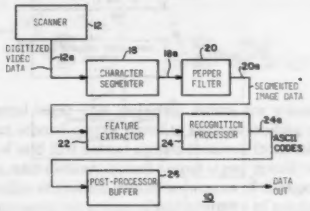
1. A road vehicle direction indicator system for a vehicle unit, said system comprising two sets of direction indicator lamps for respective sides of the vehicle unit, a selector switch operable to select the operation of one or the other of said sets of lamps, an electromagnetic relay having a pair of contacts connected in series with said selector switch so that when the contacts are closed electric current will be supplied to the selected set of lamps, an oscillator for driving said relay, said oscillator including a capacitor, a charge/discharge circuit for the capacitor, first switch means operable to modify the operation of the charge/discharge circuit, a control input for said first switch means, a reference voltage source, second switch means operable to change the output of the reference voltage source, a control input for said second switch means, and a comparator for comparing the capacitor voltage and the reference voltage, said comparator providing a signal to control the energization of said relay when the capacitor and reference voltages at the inputs of the comparator become substantially equal, said control inputs being electrically connected to said relay contacts so that the operation of the charge/discharge circuit is modified and the output of the reference voltage source changed, only when the relay contacts change their state.

4,365,234

SEGMENTATION SYSTEM AND METHOD FOR OPTICAL CHARACTER SCANNING

Ernest G. Henrichon, Jr., Bedford, N.H., assignor to Hendrix Electronics, Inc., Manchester, N.H.

Filed October 20, 1980, Ser. No. 198,303
Int. Cl.³ G06K 9/34
U.S. Cl. 340—146.3 SY **18 Claims**



1. System for detecting an intercharacter boundary for a digital representation of a string of two or more characters extending in a first (X) direction against a background, said characters having a first (B) characteristic and said background having a second (W) characteristic, said digital representation including a bit for each pixel of an m row by n column array of pixels, each row of said array having m pixels in said X direction, and each column of said array having n pixels in a second (Y) direction, where said bits have a first binary value for pixels representative of said first (B) characteristic and have a second binary value for pixels representative of said second (W) characteristic, comprising:

A. means for generating a serpentine value (SV) signal for each of said n columns of pixels in said array, wherein the SV signal for the i^{th} column, SV(i) is representative of the number of adjacent i^{th} and $i+1^{th}$ column pixel pairs having one or more predetermined patterns in composite regions which include said i^{th} and $i+1^{th}$ columns and which are contiguous to simple regions in the $i-d^{th}$ and $i+e+1^{th}$ columns, where d and e are integers greater than or equal to 1,

wherein each composite region is a contiguous group of pixels in two or more adjacent columns bounded above and below by pixels having said W characteristic and wherein at least one pixel having said B characteristic in each row of said composite region has a boundary point in common with a pixel having said B characteristic in each adjacent row of said composite region, and

wherein each simple region is a contiguous group of pixels in a column having said B characteristic and bounded above and below by pixels having said W characteristic,

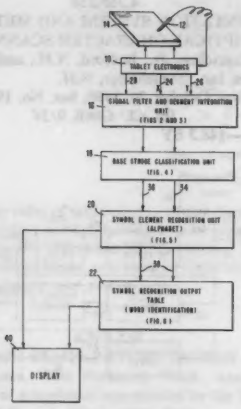
B. means for processing the succession of said SV signals to generate a boundary signal representative of a boundary column, column N, where N is an index representative of the position of said boundary column in said array, said column N being on a predetermined side of the nominal boundary between two of said characters.

4,365,235

CHINESE/KANJI ON-LINE RECOGNITION SYSTEM

Evon C. Greanias, Chappaqua, and Ernesto F. Yhap, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed December 31, 1980, Ser. No. 221,863
Int. Cl.[3] G06K 9/62
U.S. Cl. 340—146.3 AC 10 Claims



1. An on-line Chinese symbol recognition system with an extendable vocabulary comprising:

an on-line tablet device that collects pen position signals as the Chinese symbol is written,

signal filter and segment integration means for receiving pen coordinate signals and pen up/down signals from said tablet device to define segments of strokes which correspond to continuous motion of a pen on a tablet in a fixed direction,

base stroke classifying means, connected to the output of said signal filter and segment integration means, to classify the motion of the pen between pen down and pen up occurrences into one of a predetermined number of base stroke categories, including means for determining if the stroke has crossed a prior stroke,

symbol element recognition means, connected to the output of said base stroke classification unit, for analyzing the base stroke and crossing information to detect the occurrence of members of a predefined set of symbol elements, each of said symbol elements being graphically descriptive of portions of the shapes of Chinese symbols,

a symbol recognition output table, connected to the output of said symbol element recognition means, which contains a list of all the Chinese symbols in the system's vocabulary, each symbol in the list having associated with it all of the symbol element sequences that correspond to it, and

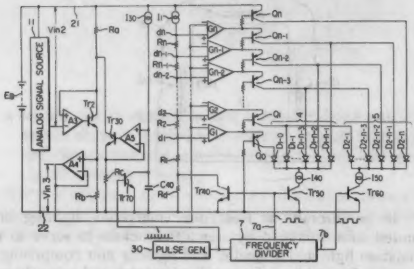
recognition table readout means which accepts the sequence of symbol elements for a given input symbol, searches the recognition output table to determine the identity of the symbol that is associated with that sequence of symbol elements, and sends the symbol identity code to the desired output device.

4,365,236

DIGITAL DISPLAY CIRCUIT DISPLAYABLE IN ANALOG FASHION

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Division of Ser. No. 907,210, May 18, 1978, abandoned. This application August 8, 1980, Ser. No. 176,579
Claims priority, application Japan, May 20, 1977, 52-57554; July 7, 1977, 52-81273
The portion of the term of this patent subsequent to April 14, 1998, has been disclaimed.
Int. Cl.[3] H03K 13/175
U.S. Cl. 340—347 AD 7 Claims



1. A digital display circuit for indicating an analog signal voltage comprising:

means for generating a plurality of reference voltages quantized at a predetermined voltage width;

first modulating means for periodically modulating said analog signal so that the modulated analog signal in one period may have a section where the amplitude continuously varies as time advanced;

second modulating means for periodically modulating every each of the reference voltages in synchronization with said first modulating means so that each of the modulated reference voltages may alternatively have two amplitudes of a higher level and a lower level, the voltage difference between said higher and lower levels being substantially equal to the difference between the highest and lowest reference voltages;

a plurality of comparators corresponding to each of said plurality of reference voltages for comparing said modulated analog signal voltage with each of said modulated reference voltages and for producing outputs in accordance with the respective compared results;

selecting means connected to said comparators and having output terminals equal in number to said comparators for generating a drive signal at only one of said output terminals, which is fixed in the relation between the modulated analog signal voltage and the modulated reference voltages;

a pair of display means each consisting of display elements which are connected to respective output terminals of said selecting means and successively arranged in such a sequence that the order in arrangement of the display element sequence in respective one of said display means pair corresponds to that in amplitude of the reference voltages, and also the element corresponding to the highest reference voltage in one of said display means pair being positioned adjacent to the element corresponding to the lowest reference voltage in the order of said display means pair; and

driving means for alternately rendering said pair of display means operative so that said one of the display means pair may be operative while said modulated reference voltages are in the lower level and said the other of the display means pair may be operative while said modulated reference voltages are in the higher level,

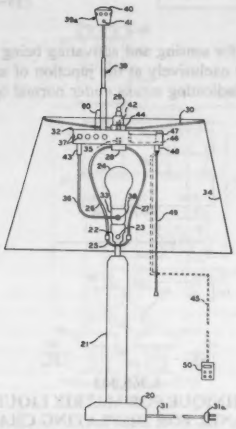
one of said display elements which is associated with said drive-signal generated output terminal of the selecting means and also with said operative display means being energized.

4,365,237

SECURITY AUDIO VISUAL EMERGENCY SYSTEM

Webster B. Knight, 3020 Eton Cove, Memphis, Tenn. 38134

Filed July 22, 1980, Ser. No. 171,145
Int. Cl.³ G08B *17/06*
U.S. Cl. 340—521 **16 Claims**



1. A lamp for use in a building comprising a base having one end for placement on a building floor or on a supporting surface vertically spaced from the floor;

a first lamp socket being supported by said base;

coupling means for coupling said socket to a building power supply;

a module assembly having a second lamp socket for receiving a lamp bulb and a threaded male end; said male end being threaded into said first lamp socket;

an extensible elongated probe having a first end and a second end being mounted at said first end on said module assembly for vertical extension of said second end;

a sensor for providing a sensing signal upon sensing of at least one of smoke, heat, intrusion or radio wave emergency signal, being attached to said probe second end;

first means for electrically coupling said sensor to said module assembly to provide an electrical path for said sensing signal;

second means provided in said module assembly and responsive to said sensing signal for intermittently flashing a bulb mounted in said second socket upon reception of said sensor sensing signal.

4,365,238

VISUAL SIGNALLING APPARATUS

Adam Kollin, 28 E. Iroquois, Pontiac, Mich. 48053

Continuation-in-part of Ser. No. 46,797, Jun. 8, 1979, abandoned. This application November 3, 1980, Ser. No. 203,227
Int. Cl.³ H04B *3/54*; G01K *11/00*
U.S. Cl. 340—521 **8 Claims**

1. A visual signalling apparatus for hearing impaired persons adapted for use in a building having illuminating means, a source of electrical power and electrical power conductors for supplying electrical power from said source to said illuminating means, said visual signalling apparatus comprising:

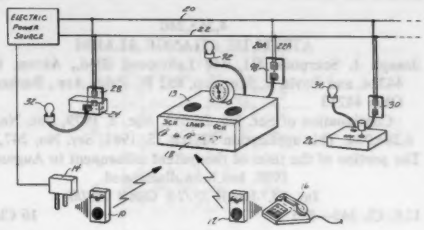
a plurality of means for sensing audible sounds resulting from the occurrence of a one of a plurality of predetermined events, each of said sensing means being associated with a different one of said predetermined sound producing events, each of said sensing means producing a distinct first output signal upon sensing said audible sounds resulting from the occurrence of said associated predetermined event;

a central logic unit;

means for transmitting said first output signal from said sensing means to said central logic unit; and

means adapted to be connected to said illuminating means, for controlling the state of said illuminating means;

said central logic unit including means for receiving said first output signal from said transmitting means and means for identifying which of said plurality of sensing means transmitted said first output signal;



said central logic unit including means for transmitting a distinct second output signal to said controlling means for each of said first output signals received from said sensing means, said distinct second output signal specifying one of a plurality of predetermined sequences of changes of state, each preassigned to one of said plurality of predetermined events, of said illuminating means so as to indicate the occurrence of one of said predetermined events;

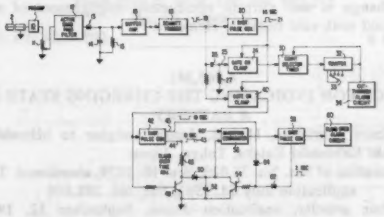
said controlling means changing the state of said illuminating means according to said predetermined specific sequence in response to said second output signal from said central logic unit.

4,365,239

INTRUSION WARNING SYSTEM

Ronald W. Mongeon, San Jose, Calif., assignor to Stellar Systems, Inc., San Jose, Calif.

Filed November 20, 1980, Ser. No. 208,779
Int. Cl.³ G08B *13/12*
U.S. Cl. 340—564 **14 Claims**



14. Apparatus for detecting the intrusion of a fence comprising: a length of shielded electrical cable, including at least one center conductor surrounded by a dielectric material, mounted on a fence to be protected; first circuit means, connected to said cable, for sensing the change in the electric field signal generated by stressing of the cable dielectric by the flexing of same due to movement of the fence and for producing an electrical signal corresponding to same; an AM detector connected to the output of said first circuit means for detecting the peaks of the produced electrical signal; second circuit means for producing an output signal whenever the detected signal

has a duration greater than a predetermined value; third circuit means responsive to output signals from said second circuit means for producing an alarm when said second circuit means produces output signals for a predetermined portion of a preset time period whose duration is greater than said predetermined value, whereby protection against intrusion by climbing over the fence is provided; forth circuit means for producing an output signal whenever the detected signal has a duration less than said predetermined value; count selector circuit means for counting the output signals from said forth circuit means and for producing an output signal whenever said count selection circuit means reaches a predetermined count; and an alarm circuit, responsive to an output signal from said count selector circuit means, for providing an alarm, whereby protection against intrusion by cutting through the fence is provided.

4,365,240

ATTITUDE CHANGE ALARM

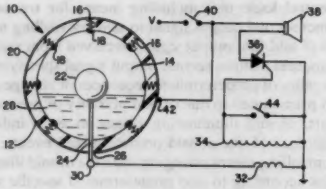
Joseph J. Scarpino, III, 748 Lakewood Blvd., Akron, Ohio 44314, and David A. Scarpino, 682 W. Paige Ave., Barberton, Ohio 44213

Continuation of Ser. No. 26,531, Apr. 3, 1979, Pat. No. 4,284,984. This application March 25, 1981, Ser. No. 247,342

The portion of the term of this patent subsequent to August 18, 1998, has been disclaimed.

Int. Cl.³ B60R *25/10*; G08B *13/00*

U.S. Cl. 340—571 **16 Claims**



1. An apparatus for sensing changes in attitude or motion, comprising:

a casing having a wall defining a hollow interior;

a plurality of resistive elements in common communication with said interior through said wall;

a conductive fluid maintained within said hollow interior and in selective current conducting engagement with certain of said resistive elements; and

circuit means interconnected between said fluid and said resistive elements for producing an output signal upon a change in said current conducting engagement of said fluid with said resistive elements.

4,365,241

DEVICE FOR INDICATING THE CHARGING STATE OF A BATTERY

Mitsuharu Morishita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 74,025, Sep. 10, 1979, abandoned. This application July 31, 1981, Ser. No. 288,869

Claims priority, application Japan, September 12, 1978, 53-125741

Int. Cl.³ G08B *21/00*; H02J *7/14*

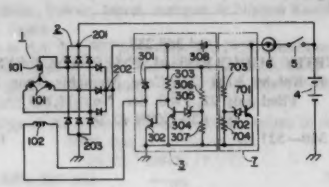
U.S. Cl. 340—636 **14 Claims**

6. A device for indicating the charging state of a battery comprising:

a single indicating means in series with a diode and said battery;

means for activating said single indicating means in response to the battery voltage being below a first predetermined value; and

means for sensing the battery voltage and for activating the single indicating means in response to the voltage of the battery being above a second predetermined value greater than said first predetermined value to indicate that the battery voltage is above the second predetermined value,



said means for sensing and activating being connected to said battery exclusively at the junction of said diode and said single indicating means under normal operating conditions.

4,365,242

DRIVING TECHNIQUE FOR MATRIX LIQUID CRYSTAL DISPLAY PANEL FOR DISPLAYING CHARACTERS AND A CURSOR

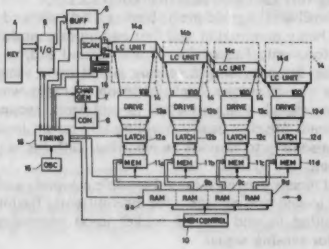
Shuhei Yasuda; Yutaka Ishii, and Tomio Wada, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed 1981, Ser. No. 237,702

Claims priority, application Japan, 1980, 55-23003

Int. Cl.³ G09G *3/36*

U.S. Cl. 340—709 **3 Claims**



1. A method for driving a liquid crystal display panel comprising signal lines, scanning lines and pixels at the crossings of the both lines and possessing the dependency of the brightness of its respective pixels on the effective value of applied voltage thereto, said scanning lines being scanned in a line sequential scanning fashion for displaying at least two rows of characters, numbers or symbols as well as a cursor line, said method comprising the following steps of:

scanning said scanning lines in the line sequential scanning fashion two rows by two rows of characters, numbers or symbols; and

driving the cursor line on one of said two rows and skipping the cursor on the other row of said two rows during said line sequential scanning.

4,365,243

INTERFACE DEVICE FOR THE ENTRY OF DATA INTO AN INSTRUMENT OF SMALL VOLUME RESPONSIVE TO BODY MOVEMENT

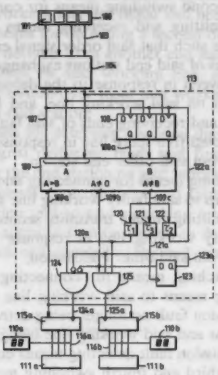
Jean-Felix Perotto, Hauterive, and Christian Piguet, Neuchatel, both of Switzerland, assignors to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed December 16, 1980, Ser. No. 217,079

Claims priority, application Switzerland, December 20, 1979, 11299/79

Int. Cl.³ G09G *3/00*

U.S. Cl. 340—712 **13 Claims**



1. An interface device for the entry of data into an instrument of small volume such as a timepiece comprising a static touch responsive sensor arranged to be manually actuable with each position of a finger corresponding to at least one symbol which may take the form of a number, letter or special sign, said sensor being formed by the juxtaposition of N electrodes adapted to provide at least N−1 coded information items representative of the position of the finger on the sensor and wherein are provided a sense/speed detecting means, coupled to the sensor for receiving signals therefrom and interpreting the signals to detect the sense and the speed of movement of the finger over the sensor, generating means for generating signals representing data to be selected or modified coupled to a display means for displaying symbols representative of the data on a composite display device comprising at least a first and a second displays, said generating means being coupled to said sense/speed detecting means for receiving signals therefrom for modifying the data controlling symbols appearing on said first display if the finger is moved over said sensor at a speed less than a predetermined speed and on said second display if the finger is moved over said sensor at a speed greater than said predetermined speed.

4,365,244

ARRANGEMENT FOR DISPLAYING IMAGES USING LIGHT EMITTING DIODES

Klaus Gillessen, Untergruppenbach; Heinz Rinderle, Heilbronn; Werner Schairer, Weinsberg; Martin Siegle, Weinstadt, all of Fed. Rep. of Germany, and Christoph Malinowski, Bridgewater, N.J., assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

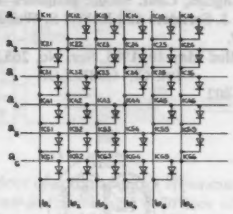
Filed March 25, 1981, Ser. No. 247,596

Claims priority, application Fed. Rep. of Germany, April 3, 1980, 3012995

Int. Cl.³ G09G *3/32*

U.S. Cl. 340—782 **3 Claims**

1. An arrangement for displaying images using light-emitting diodes comprising two types of modules, of which a first type of module has a matrix-type wiring with the same number of horizontal and columns lines, each horizontal line being connected to one and only one column line and, with the exception of those crossing points at which the crossing horizontal and column lines are connected together, one light-emitting diode being arranged at each crossing point between a column line and a horizontal line, one connection of each said light-emitting diode being connected respectively with the horizontal line present at the crossing point and the other connection being connected in each case to the column line present at the crossing point; and a second type of module has matrix wiring with the same number of horizontal lines as column lines, which number is the same as in the first type of module; one light-emitting diode in each case being arranged at each crossing point between horizontal and column lines of the second



type of module, one connection being connected in each case to the horizontal line present at the crossing point and the other connection being connected respectively to the column line present at the crossing point; the arrangement being formed like a square matrix comprising the two types of module with the modules of a diagonal of the matrix comprising modules of the first type and the remaining elements of the matrix comprising modules of the second type, each module of a horizontal line being connected to its adjacent module(s) in the horizontal line and each module of a column being connected to its adjacent module(s) in the column line such that each horizontal line and each column line of a module is connected respectively to the same horizontal or column line respectively if its adjacent module.

4,365,245

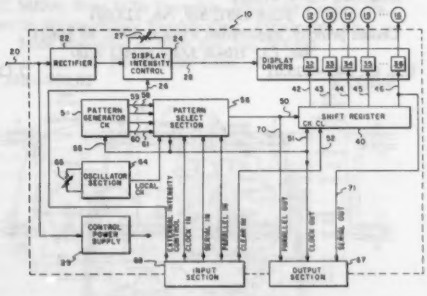
DISPLAY MODULE FOR TRAVELING PATTERN SIGNS

Gustavo T. Colmenero, 2624 Walnut La., Plano, Tex. 75075

Filed June 5, 1978, Ser. No. 912,211

Int. Cl.³ G09G *3/00*

U.S. Cl. 340—792 **6 Claims**



1. A display module for interconnection with modules of the same kind, each having a set of lights associated therewith, to form a display system, said module comprising:

means responsive to control signals for controlling the inten-

sity of each of a plurality of lights in a set associated therewith;

means for generating said control signals capable of driving said controlling means so as to display a time-varying intensity pattern in the associated set of lights;

input means for deriving said control signals for said controlling means from an external source, including from another module of the same kind; and

parallel output means for driving a like module so as to synchronously display the same pattern.

4,365,246

ROSARY DEVICE

Lowell E. Dewolf, 666 San Mario Dr., Solana Beach, Calif. 92075; James J. Scrudato, 2796 N. Dalenhurst Pl., Simi Valley, Calif. 83065, and Robert S. Wallace, 823 S. Longwood Ave., Los Angeles, Calif. 90005, assignors to Lowell E. Dewolf; James J. Scrudato and Robert S. Wallace, all of Solana Beach, Calif.

Filed May 18, 1981, Ser. No. 265,042

Int. Cl.³ G08B 5/36

U.S. Cl. 340—802 **12 Claims**

1. A Rosary device, comprising

(a) a casing sized to be hand held, the casing having wall structure,

(b) electrically energizable means having terminals proximate said wall structure, said terminals defining a loop,

(c) and control means for controllably electrically energizing said (b) means so that said terminals are successively and controllably illuminated,

(d) certain of said terminals having a first characteristic indicative of a Hail Mary prayer, and others of said terminals having a second characteristic indicative of an Our Father prayer.

4,365,247

END STATION DIGITAL TRANSMISSION LINK RELIEVING SYSTEM

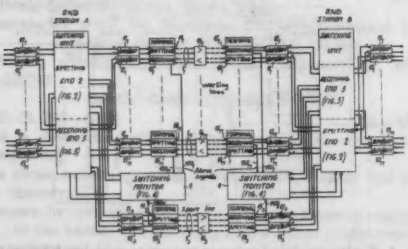
Gilbert L. Bargeton, Paris, and Claude P. Beynie, La Varenne, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed 1981, Ser. No. 223,091

Claims priority, application France, 1980, 80 00621

Int. Cl.³ H04B 3/46; H04Q 9/00

U.S. Cl. 340—825.01 **7 Claims**



1. An end station for a system for relieving a plurality of bidirectional digital data transmission working lines connected between two of the end stations of a digital transmission system including a plurality of bidirectional digital transmission spare lines connected between said end stations, said end station comprising:

means for detecting transmission faults on each of said working lines,

means for selecting a free spare line in response to the detection of transmission faults on a working line,

means for emitting digital order signals to the other end station,

means for receiving digital order signals from said other end station,

first and second switching means for connecting said order signal emitting and receiving means to a selected free spare line such that said order signal emitting and receiving means of said end stations exchange first order signals therebetween in response to the detection of a transmission fault on said working line, and for connecting the emitting and receiving ends of said faulty working line to said selected free spare line in response to said first order signals from said other end station,

third switching means for connecting said order signal emitting means to said faulty working line such that said order signal emitting means transmits second order signals on said faulty working line in response to said first order signals from said other end station,

fourth switching means for connecting said order signal receiving means to said working line in response to the transmission fault no longer being detected by the detecting means and said working line being repaired;

said transmission fault detecting means controlling said first, second, third and fourth switching means in response to said second order signals received in said order signal receiving means such that emitting and receiving ends of said repaired working line are connected to said working line and are disconnected from said selected spare line;

said order signal receiving means holding a connection to said selected spare line from a time at the start of exchange of said first order signals and up to just before the transmission fault on said working line is no longer being detected by the detecting means such that said order signal receiving means can receive order signals from said other end station on said selected spare line in response to a transmission fault which relates to another working line and which is detected in said other end station.

4,365,248

DIGITAL TRANSMISSION LINK RELIEF TRIGGERING SYSTEM

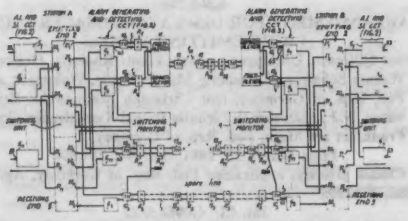
Gilbert L. Bargeton, Paris, and Claude P. Beynie, La Varenne, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed 1981, Ser. No. 223,092

Claims priority, application France, 1980, 80 00622

Int. Cl.³ H04B 3/46; H04Q 9/00; G06F 11/00

U.S. Cl. 340—825.01 **12 Claims**



1. An end station for triggering relief of a working line in a

bidirectional digital transmission link of a digital transmission system, the link having a plurality of bidirectional digital transmission working lines and a plurality of bidirectional digital transmission spare lines, the link being interconnected between two of the end stations, said end station comprising:

first detecting means for detecting a first digital alarm indication signal derived from outside of said link,

first replacing means controlled by said first detecting means for replacing a first detected outside alarm indication signal by a first digital switching inhibition signal, said end station normally transmitting the first digital switching inhibition signal through said working line and transmitting the first digital switching inhibition signal on a spare line when said working line has failed and been relieved,

second detecting means for detecting a second digital alarm indication signal derived from another end station or any intermediary station on said working line, said second means triggering switch-over from said working line to a spare line in said end station,

third detecting means for detecting a second digital switching inhibition signal delivered from said first replacing means of another the end station on said working line, and

second replacing means controlled by said third detecting means for replacing said second switching inhibition signal by a second alarm indication signal, as derived from outside of said link and coupled to the end station via the link.

4,365,249

LINE MONITORING DEVICE IN TWO-WAY DATA COMMUNICATION SYSTEM

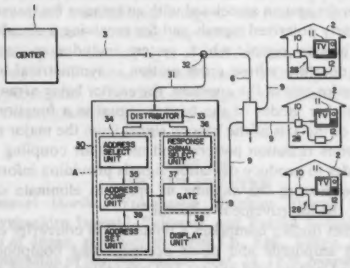
Toshio Tabata, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed September 29, 1980, Ser. No. 191,782

Claims priority, application Japan, September 29, 1979, 54-125992

Int. Cl.³ H04Q *9/00*; H04B *1/00*; H04N *7/00*

U.S. Cl. 340—825.3 **7 Claims**



1. A line monitoring device for use in a two-way data communications system for carrying out data communications between a central facility and a plurality of terminal units comprising:

an address detection section for comparing a digital address included in a polling down-signal from said central facility with a pre-stored digital address;

a response signal detecting section for detecting up-signals from said terminal units; and

a display section operating in response to said address detection section and said response signal detecting section to display the level of an up-signal from a terminal unit whose address coincides with said pre-stored address.

4,365,250

GARAGE DOOR OPERATION CONTROL APPARATUS

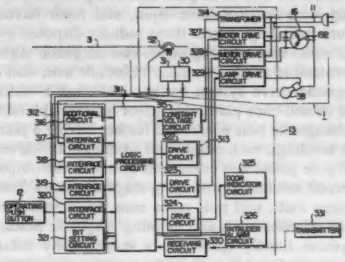
Shigeru Matsuoka; Takeshi Tokunaga; Seiji Yonekura; Mitsuo Suzuki, and Kenji Nakamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed April 15, 1980, Ser. No. 140,672

Claims priority, application Japan, April 19, 1979, 54-48402

Int. Cl.³ G06F *7/04*; G08C *19/00*

U.S. Cl. 340—825.32 **14 Claims**



11. In a garage door operation control apparatus comprising door operating means for operating a main door of a garage to effect opening and closing thereof, command means for selectively ordering the operation of said main door, main detector means for detecting the operating condition of said main door, auxiliary detector means for detecting at least one abnormal condition including a garage window open, an auxiliary door open, a fire in the garage and generation of a special gas, alarm means, and electrical control means electrically connected to said door operating means, said command means, said main detector means, said auxiliary detector means and said alarm means to effect control of said door operating means and said alarm means; the improvement wherein said electrical control means includes signal processing means for controlling said alarm means by logically analyzing electrical signals produced from said main detector means and said auxiliary detector means, including means for actuating said alarm means only in response to simultaneous application thereto of an electrical signal indicating the closed condition of said main door as derived from said main detector means and an electrical signal indicating an abnormal condition from said auxiliary detector means.

4,365,251

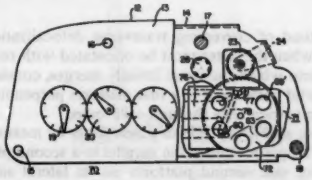
ELECTRICALLY DRIVEN METER TOTALIZING DEVICE

Robert C. Miller, Penn Hills Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed December 4, 1980, Ser. No. 213,692

Int. Cl.³ H04Q *9/00*; G08C *19/16*

U.S. Cl. 340—870.02 **8 Claims**



1. An electrically driven meter totalizing device responsive to pulse signals comprising:

a dial register assembly including a front plate, a back plate, a gear train, a plurality of dial indicators, and a rotatable

input, said gear train being carried for rotation between said front plate and said back plate and coupling said dial indicators adjacent said front plate, said rotatable input being carried adjacent said back plate and being in driving relationship with said gear train;

circuit means including a plurality of outputs, said outputs being discretely energized in a repeating sequence and in response to said pulse signals;

an electromagnetic drive system including a rotor mounted for rotation on said back plate and being in driving relationship with said rotatable input, said rotor having an armature including at least three radially disposed evenly spaced equal magnetic segments, said magnetic segments being rotatable along a circular reference axis, said electromagnetic drive system further including a stator attached to said back plate, said stator having a plurality of electromagnetic pole pieces and further having a plurality of coil windings, each of said coil windings carried on one of said pole pieces and connected to one of the outputs of said circuit means for producing magnetic fluxes from the pole piece ends, said pole piece ends being adjacent said circular reference axis and defining magnetic poles, said pole pieces fixedly spaced in a magnetically rotatably attractive relationship with said magnetic segments so that immediately after the fluxes produced from the ends of one of said pole pieces attracts at least one of said magnetic segments, causing rotation of said armature, the ends of the pole piece that will next produce fluxes will be disposed to attract at least another one of said magnetic segments.

4,365,252

CORRECTION METHOD FOR TRANSVERSE DEFOCUSSING OF PARABOLIC ANTENNA

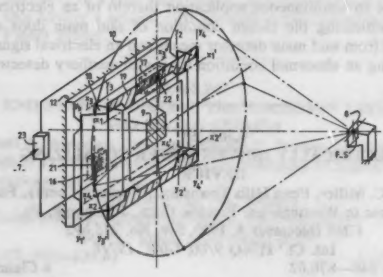
Bernard Hubert, Le Cannet, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed December 3, 1980, Ser. No. 212,663

Claims priority, application France, December 18, 1979, 79 30957

Int. Cl.³ H01Q *3/12, 19/12*

U.S. Cl. 343—761 **8 Claims**



1. A method of correcting transverse defocalization of a paraboloid when the latter must be orientated with respect to the source into which the focus initially merges, consisting of:

securing said paraboloid to a first platform perpendicular to the symmetrical axis through said focus;

articulating said first platform transversely by means of two double hinges articulated in parallel to a second platform;

articulating said second platform on its lateral sides and orthogonally by means of two double hinges articulated in parallel to the fixed portion;

orienting said double hinges jointly substantially in the direction of said paraboloid focus initially merged into the source;

providing means for moving said platforms;

servo-controlling said moving means by a pointing error detecting system;

whereby the transverse defocalization of the paraboloid is corrected permanently by constantly maintaining its focus in the immediate proximity of the source.

4,365,253

ANTENNA FEEDER SYSTEM FOR A TRACKING ANTENNA

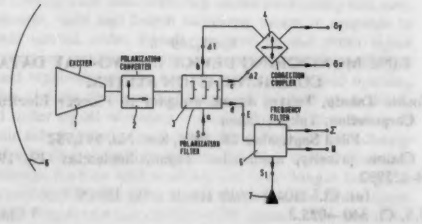
Günter Mörz, Ludwigsburg, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 29, 1981, Ser. No. 268,377

Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020514

Int. Cl.³ H01Q *13/00*

U.S. Cl. 343—786 **9 Claims**



1. In a feeder system associated with an antenna for transmitting circularly polarized signals and for receiving a circularly polarized beacon signal, which system includes an exciter having an aperture whose cross section is symmetrical to at least one major axis of the aperture, the exciter being arranged to excite higher modes of the beacon signal as a function of deviations of the axis of the beacon signal from the major axes of the antenna radiation pattern, and means for coupling the higher modes to produce deviation signals providing information for positioning the antenna in order to eliminate such deviations, the improvement wherein:

said system further comprises a polarization converter containing amplitude and phase compensating components disposed behind said exciter and connected between said exciter and said coupling means for conducting electromagnetic signals therebetween;

said coupling means are included in a polarization filter (ortho-mode-transducer) connected to said converter for receiving and transmitting signals with mutually orthogonal polarization directions; and

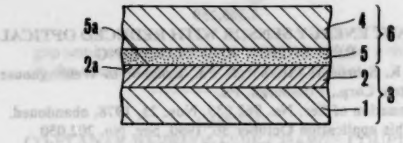
said polarization filter is provided with a first waveguide branch having a first port for transmitting and for receiving communication signals associated to one polarization direction and an additional port for deviation signals and a second waveguide branch having a second port for transmitting and for receiving communication signals associated to the other orthogonal polarization direction and also an additional port for deviation signals.

4,365,254

TWO-COLOR RECORDING PAPER AND METHOD AND RECORDING APPARATUS UTILIZING THE TWO-COLOR RECORDING PAPER

Masaru Ozawa; Yuji Ooba, and Toshio Shimizu, all of Yokosuka, Japan, assignors to Nippon Telegraph and Telephone Public Corp., Tokyo, Japan

Division of Ser. No. 181,896, Aug. 27, 1980, Pat. No. 4,328,977. This application December 28, 1981, Ser. No. 335,083
Int. Cl.³ G01D *15/10, 15/34*
U.S. Cl. 346—1.1 9 Claims



1. A recording method utilizing two-color recording paper comprising the steps of:

feeding two-color recording paper, said paper comprising an ink film having a thin film base and an ink layer of a first hue coated on the film base, said ink layer containing a mixture of a colored material such as dye with a thermoplastic material which is solid at ordinary temperature and becomes fluid at high temperature, and a thermosensitive recording paper having a substrate, and a coloring layer coated on the substrate and containing a developer which colors in a second hue different from the hue of said ink, said ink film and said thermosensitive recording paper being overlapped separably with an ink surface of said ink film and a coloring surface of said thermosensitive recording paper facing each other;

melting ink of said ink film by a first thermal head at a first position on the paper path, to transfer the melted ink onto the coloring surface of said thermosensitive recording paper;

peeling said ink film from said thermosensitive recording paper at a second position on the recording paper path, to produce a transferred image in the first hue on said thermosensitive recording paper; and

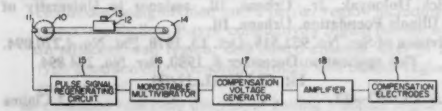
coloring the coloring layer of said thermosensitive recording paper by a second thermal head at a third position on the paper path, to produce an image in the second hue on said thermosensitive recording paper.

4,365,255

INK JET PRINTER

Masanori Horike, Yokohama; Koichiro Jinnai, Kawasaki; Kyuhachiro Iwasaki, Fujisawa, and Yutaka Kodama, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 23,320, Mar. 23, 1979, abandoned. This application November 28, 1980, Ser. No. 211,200
Claims priority, application Japan, April 7, 1978, 53-41041
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 1 Claim



1. An ink jet printer, comprising:

an ink jet nozzle disposed for movement in parallel with a recording surface;

a charging electrode for charging ink droplets formed by the ejection of ink through said ink jet nozzle;

a pair of electrostatic deflection electrodes for producing an electric field which may deflect the ink droplets in the direction perpendicular to the direction of the movement of said ink jet nozzle depending upon the total charge on each ink droplet;

a pair of electrostatic compensation electrodes disposed orthogonal to said deflection electrodes for producing an electric field in the direction in which said ink jet nozzle is moved;

a printing-scanning speed detecting device for sensing the relative speed between said recording surface and said ink jet nozzle; and

a compensation voltage generating circuit responsive to the output of said speed detecting device for applying to said compensation electrodes a D.C. compensation electrode drive signal proportional to the relative speed between said recording surface and said ink jet nozzle, said circuit comprising:

a pulse generating means for generating pulses at a rate corresponding to said relative speed;

integrating means coupled to said pulse generating means for integrating said pulses to provide an output signal having a level corresponding to said relative speed;

a variable gain amplifier coupled to said integating means and responsive to said output signal for providing a D.C. compensation electrode drive signal having a voltage level proportional to the level of said output signal, said compensation electrode drive signal being coupled to said compensation electrodes; and

setting means for setting the gain of said amplifier in accordance with a desired inclination angle of characters to be printed by said ink droplets on said recording surface,

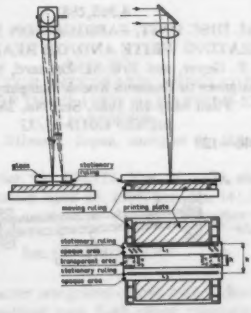
whereby the inclination of characters to be printed is varied in accordance with the relative speed between said recording surface and said ink jet nozzle to render the angle of inclination of characters printed on said recording surface by said ink drops substantially independent of said relative speed, without mechanical tilting or rotation of any of said electrodes.

4,365,256

METHOD FOR ACCURATE CONTROL OF A LIGHT BEAM IN PHOTOTYPESETTING AND OTHER APPLICATIONS

Eero Byckling, Kimmeltie 13A 12, 02100 Espoo 10, Finland
Teknik ApS, Herning, Denmark

Filed 1981, Ser. No. 237,772
Claims priority, application Finland, 1980, 800543
Int. Cl.³ B41B *17/14;* G06K *15/12*
U.S. Cl. 346—108 12 Claims



11. Apparatus for controlling a light beam to write picture

elements on an image surface comprising means for writing a sufficient number of adjacent stripes, one stripe at a time, to fill the image surface, including means for deflecting the light beam across the stripe, having therein means for causing said light beam to deflect in a plurality of strokes having lengths approximately equal to the width of the stripe and means for simultaneously moving the light beam along the length of the stripe at a velocity lower than that provided thereto in said strokes,

means for measuring two-dimensional position coordinates of the beam on the image surface, including a plurality of rulings situated in the vicinity of the writing area of the image surface, as a function of signals, which themselves are functions of positions of indicia in said rulings, and means for deflecting the light beam along a ruling while writing on the surface and for providing said signals to said means for measuring two-dimensional position coordinates;

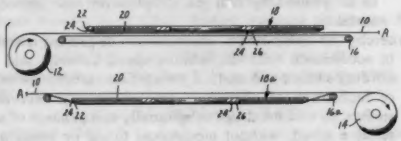
said means for deflecting including means for deflecting said beam across said ruling indicia, for registering the resulting signal, and for modulating the beam during said strokes responsive thereto so as to cause the writing to be positioned correctly on the image surface.

4,365,257

STRETCHED-FILM OPTICAL RECORDING DISC

Sten R. Gerfast, Mendota Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed March 5, 1981, Ser. No. 241,000
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 **9 Claims**



1. An optical recording disc comprising

a rigid, dimensionally-stable support,

a thin, strong, tough plastic film which is tautly secured to said support to provide a broad, generally circular, flat area which is normally not in contact with the support, and

a thin, uniform, optically-recordable coating substantially covering said broad out-of-contact area of the plastic film, which coating is substantially free from particles greater than 0.05 micrometer and has a Light-Scattering Value as herein defined of less than 5%.

4,365,258

OPTICAL DISC UNIT, FABRICATION METHOD AND COOPERATING WRITE AND/OR READ APPARATUS

Frederick F. Geyer, and Eric M. Leonard, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 18, 1981, Ser. No. 264,313
Int. Cl.³ G01D *15/32*
U.S. Cl. 346—137 **27 Claims**

1. An optical disc-unit adapted for the optical writing and/or reading of high density information, said unit comprising:

(a) an optical disc including a flexible, disc-shaped support carrying a record layer;

(b) a disc cover opposing said record layer and comprising a flexible, disc-shaped sheet which is substantially transparent to writing and/or reading wavelengths and which is generally coextensive with said optical disc; and

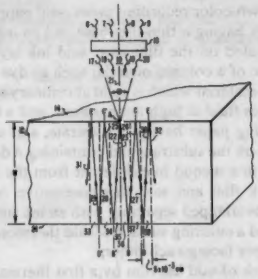
(c) annular retaining means, engaging said support and said sheet substantially continuously around annular peripheral regions, for positioning the sheet and record portions of said layer in spaced relation.

4,365,259

RADIANT ENERGY SENSOR WITH REDUCED OPTICAL REFLECTION AND BLOOMING

Dieter K. Schroder, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 962,833, Nov. 21, 1978, abandoned. This application October 30, 1980, Ser. No. 202,050
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **16 Claims**



1. A sensor for converting radiant energy having a wavelength greater than 3 micrometers into electrical signals and for suppressing optical crosstalk comprising:

a crystalline substrate having a semiconductor first surface suitable for receiving radiant energy;

said substrate including a plurality of detectors for generating electronic charge in response to the passing of radiant energy through said first surface; and

means for absorbing a portion of said radiant energy passing through said first surface and propagating beyond a predetermined distance in said crystalline substrate below said first surface;

said means for absorbing including a heavily doped layer of impurities to provide substantial optical absorption in said layer by the mechanism of free carrier absorption.

4,365,260

SEMICONDUCTOR LIGHT EMITTING DEVICE WITH QUANTUM WELL ACTIVE REGION OF INDIRECT BANDGAP SEMICONDUCTOR MATERIAL

Nick Holonyak, Jr., Urbana, Ill., assignor to University of Illinois Foundation, Urbana, Ill.

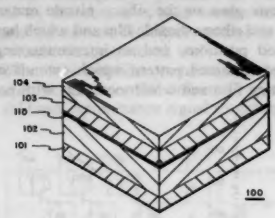
Division of Ser. No. 951,515, Oct. 13, 1978, Pat. No. 4,270,094. This application December 8, 1980, Ser. No. 214,894
Int. Cl.³ H01L *33/00*
U.S. Cl. 357—17 **12 Claims**

1. A semiconductor light emitter heterostructure device, comprising:

first and second relatively wide bandgap semiconductor regions of opposite conductivity types; and

an active region disposed between said first and second

regions, said active region comprising a quantum well active layer of a relatively narrow bandgap indirect band-

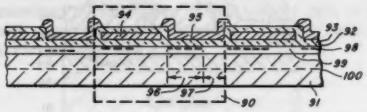


gap semiconductor material, said layer having a thickness in the range of about 100 to 400 Angstroms.

4,365,261
CO-PLANAR BARRIER-TYPE CHARGE COUPLED DEVICE WITH ENHANCED STORAGE CAPACITY AND DECREASED LEAKAGE CURRENT

Pallab K. Chatterjee, Dallas, and Aloysious F. Tasch, Jr., Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed August 26, 1977, Ser. No. 828,079
Int. Cl.³ H01L *29/78;* G11C *19/28, 11/34*
U.S. Cl. 357—24 **4 Claims**



1. A charge coupled device comprising:

a substrate of semiconductor material having a dopant impurity of P-type conductivity, said substrate having a first surface;

a body of insulating material disposed on said first surface of said substrate;

means defining a buried channel layer having a dopant impurity of N-type conductivity in said substrate lying adjacent to said first surface of said substrate and providing a charge transfer channel;

first and second spaced apart phase electrodes overlying said channel in transverse relation thereto and arranged with respect to said body of insulating material so as to provide a layer of insulating material of uniform thickness between each of said phase electrodes and said first surface of said substrate;

spaced relatively shallow regions having a dopant impurity of P-type conductivity lying within said buried channel layer of N-type conductivity near said first surface of said substrate, each of said relatively shallow P-type conductivity regions extending beneath a corresponding one of said first and second phase electrodes and being respectively aligned adjacent one edge thereof but terminating short of the opposite edge of the electrode corresponding thereto;

said substrate under each of said first and second phase electrodes being divided into a barrier region including a respective shallow P-type conductivity region therein and an adjacent well region, said buried channel layer of N-type conductivity extending through said barrier regions and said well regions;

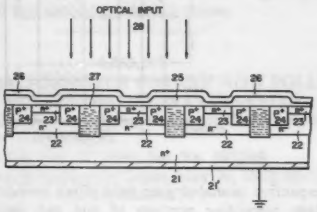
an enhanced relatively deep layer having a dopant impurity of P-type conductivity and of greater concentration than the P-type conductivity dopant impurity in the semiconductor material of said substrate disposed within said substrate at a depth spaced from said first surface and extending through said barrier regions and said well regions beneath said first and second phase electrodes; and

the P-type conductivity dopant impurity of each of said relatively shallow P-type conductivity regions having a Gaussian distribution with a peak lying within 500 Å–2000 Å from said first surface of said substrate, the N-type conductivity dopant impurity of said N-type conductivity buried channel layer having a Gaussian distribution with a peak lying within 3000 Å–10,000 Å from said first surface, and the P-type conductivity dopant impurity of said enhanced relatively deep P-type conductivity layer having a Gaussian distribution with a peak lying within 5000 Å–15,000 Å from said first surface.

4,365,262
SEMICONDUCTOR IMAGE SENSOR

Junichi Nishizawa, Sendai, Japan, assignor to Handotai Kenkyu Shinkokai, Sendai, Japan

Filed November 26, 1980, Ser. No. 210,712
Int. Cl.³ H01L *27/14, 31/00*
U.S. Cl. 357—31 **11 Claims**



1. A semiconductor image sensor comprising:

a low resistance semiconductor electrode region of a first electrical conductivity type;

a plurality of high resistivity channel regions formed on said electrode region;

low resistivity semiconductor storage regions of said first electrical conductivity type formed on corresponding ones of said channel regions;

gate means for forming controllable potential barriers in corresponding ones of said channel regions;

an insulating film formed on said low resistivity semiconductor storage regions;

electrically conductive line electrodes formed on said insulating film; and

electrically conductive control lines connected to corresponding ones of said gate means,

said line electrodes, insulating film and semiconductor storage regions forming storage capacitors and optical input windows.

4,365,263
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE COMPOSED OF INSULATED GATE FIELD-EFFECT TRANSISTOR

Hiroto Kawagoe, Hinode, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 634,772, Nov. 24, 1975, abandoned.
This application April 18, 1980, Ser. No. 141,574
Claims priority, application Japan, September 4, 1975, 50/107350
Int. Cl.³ H01L *27/04*
U.S. Cl. 357—45 **6 Claims**

1. A semiconductor integrated circuit matrix device having a plurality of insulated gate field effect transistors arrayed along rows and columns comprising:

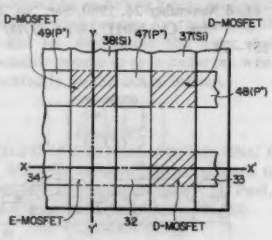
(a) a semiconductor substrate having a first conductivity type;

(b) a plurality of semiconductor regions having a second conductivity type opposite to said first conductivity type formed in said semiconductor substrate and arrayed along said each row;

(c) gate insulated films each formed on the surface of the portion of said semiconductor substrate between said adjacent semiconductor regions in each row, all of said gate insulating films in respective rows having substantially equal thickness;

(d) a field insulating film formed on the surface of said semiconductor substrate, defining said semiconductor regions and said gate insulating films the thickness of said field insulating film being greater than that of said gate insulating film;

(e) a plurality of conductive strips formed along said respective columns, each conductive strip being arranged on said gate insulating films in each column thereby defining



respective insulated gate field effect transistors at all of those respective portions of said gate insulating films crossed over by said conductive strips; and

(f) ion-implanted regions having said second conductivity type formed in selected ones of said portions overlaid by said gate insulating films, and a portion of said ion-implanted regions being self-aligned by said field insulating film, whereby said ion-implanted regions act as the channel regions of depletion type field effect transistors, respectively, while the others of said portions overlaid by said gate insulating films act as the channel regions of enhancement type field effect transistors, respectively, and; wherein each of said conductive strips is coupled to receive first and second signal voltage levels, so that each of said enhancements type field effect type transistors is turned on and off by said first and second signal voltage levels, respectively, and each of said depletion type field effect transistors is normally on irrespective of said signal voltage levels.

4,365,264

SEMICONDUCTOR DEVICE WITH HIGH DENSITY LOW TEMPERATURE DEPOSITED $SI_wN_xH_yO_z$ PASSIVATING LAYER

Kiichiro Mukai; Seiki Harada; Shin-ichi Muramatsu, all of Hachioji; Atsushi Hiraiwa, Kokubunji; Shigeru Takahashi, Hachioji; Katsuhisa Usami, Hinodemachi; Seiichi Iwata, Sayama; Satoru Ito, Hinodemachi, and Takeo Yoshimi, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

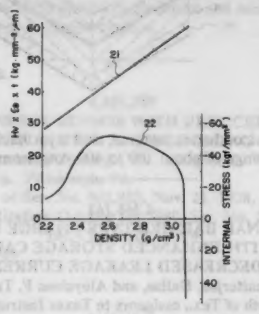
Continuation of Ser. No. 62,118, Jul. 30, 1979, abandoned. This application May 19, 1981, Ser. No. 265,167

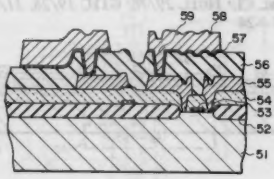
Claims priority, application Japan, July 31, 1978, 53-92633

Int. Cl.³ H01L *29/34*

U.S. Cl. 357—54 **5 Claims**

1. A semiconductor device comprising a passivation layer which is disposed on a semiconductor body having at least one circuit element therein and which is made of a silicon nitride material consisting essentially of 61–70 weight-% of Si, 25–37 weight-% of N, 0.8–5.9 weight-% of H and up to 0.6 weight-% of O and having a density of 2.9–3.05 gr/cm^3, wherein said semiconductor body includes a silicon dioxide film which is disposed on a semiconductor wafer and which has an opening at a predetermined position, an inorganic insulating film of phosphosilicate glass or the silicon nitride material which is disposed on said silicon dioxide film and which has openings at predetermined positions, and an interconnecting conductor layer of predetermined pattern which extends on said inorganic insulating film and which connects with predetermined





regions in said wafer via said openings of said inorganic insulating film and said opening of said silicon dioxide film, wherein said passivation layer has a metal layer of predetermined pattern which extends on said passivation layer and which connects with said interconnecting conductor layer via an opening existent at a predetermined position of said passivation layer, and wherein said metal layer is extended over an active region of said semiconductor wafer and is used as a bonding pad.

4,365,265

COLOR TEMPERATURE CONTROL CIRCUIT

Kaoru Tsujita, Katano; Sigeki Tobioka, Gifu, and Ikuo Monden, Ota, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed June 19, 1981, Ser. No. 275,296

Claims priority, application Japan, June 20, 1980, 55-87100[U]

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—29 **7 Claims**

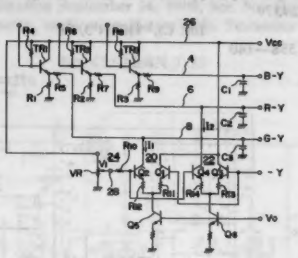
1. A color temperature control circuit for use in a color television receiver for changing the ratio of blue, red and green chrominance signals obtained from a chrominance signal demodulator in relation to a luminance signal obtained from a video amplifier, said color temperature control circuit comprising:

a reference voltage generator for generating a predetermined reference voltage;

a first differential amplifier connected to said chrominance signal demodulator for defining a first current path for said green chrominance signal to ground, said first differential amplifier also connected to said reference voltage generator and said video amplifier for comparing said luminance signal with said reference voltage such that

when said luminance signal drops below said reference voltage, said first current path actuates to conduct said green chrominance signal to ground with a conductivity determined by the degree of said voltage drop of luminance signal below said reference voltage to reduce the green chrominance signal level; and

a second differential amplifier connected to said chrominance signal demodulator for defining a second current path for said red chrominance signal to ground, said second differential amplifier also connected to said reference voltage generator and said video amplifier for comparing said luminance signal with said reference voltage such that when said luminance signal drops below said reference voltage, said second current path actuates to conduct said red chrominance signal to ground with a conductivity determined by the degree of said voltage drop of luminance signal below said reference voltage to reduce the red chrominance signal level.

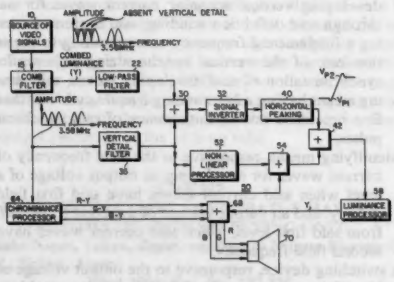


4,365,266

HORIZONTAL AND VERTICAL IMAGE DETAIL PROCESSING OF A COLOR TELEVISION SIGNAL

William A. Lagoni, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed April 20, 1981, Ser. No. 255,375
Int. Cl.³ H04N 9/535
U.S. Cl. 358—37 **13 Claims**



1. Video signal processing apparatus in a television receiver system for processing a video signal containing image representative luminance and chrominance components disposed within a frequency spectrum of said video signal in frequency interleaved relation, said system including comb filter means for providing at a first output a combed luminance signal with amplitude peaks at integral multiples of an image line scanning frequency and amplitude nulls at odd multiples of one-half said line frequency, and for providing at a second output a combed signal with amplitude peaks at odd multiples of one-half said line frequency and amplitude nulls at integral multiples of said line frequency, and wherein signals provided at said second output include signal frequencies representative of luminance vertical image detail information absent from said combed luminance signal at said first output, said apparatus comprising:

means coupled to said second output of said comb filter means for selectively passing said signal frequencies corresponding to vertical detail information, exclusive of signal frequencies occupying the band of chrominance signal frequencies, to thereby derive a vertical detail component from said second output of said comb filter means;

first means for combining combed luminance signals from said first output of said comb filter means with a given magnitude of said vertical detail component to produce a restored luminance signal;

first signal translating means responsive to said restored luminance signal for peaking horizontal image detail information of said restored luminance signal, to provide a horizontally peaked luminance signal at an output;

second signal translating means responsive to said vertical detail component for developing a vertical detail peaking component at an output;

second means for combining signal outputs from said first and second signal translating means to produce a horizontally and vertically peaked luminance signal at an output; and

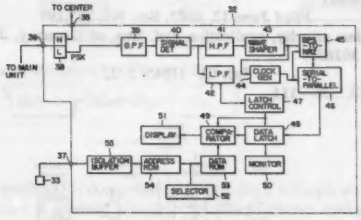
luminance signal utilization means for receiving output signals from said second combining means.

4,365,267

PASSIVE DATA MONITOR FOR USE WITH POLLING PATTERN GENERATOR IN CATV SYSTEM

Youichiro Tsuda, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 27, 1981, Ser. No. 267,508
Claims priority, application Japan, May 30, 1980, 55-73584
Int. Cl.³ H04N 7/10
U.S. Cl. 358—84 **4 Claims**



1. A passive data monitor for a CATV system having a single center and a number of terminal units connected to said center for transmitting television programs through cables to said terminal units, each of said terminal units having address setting means capable of arbitrarily setting address number therein, said passive data monitor comprising: means for receiving a polling pattern signal having an address code for calling a corresponding terminal unit and a command code for requesting a designated answer from the called terminal unit; and means for comparing an up data signal outputted from said terminal unit in response to said code with said designated answer requested by said command code and for judging an operational state of said terminal unit from a resultant comparison output.

4,365,268

VIDEO PLANTER GUIDANCE AID

David T. Allen, and Keith R. Baker, both of Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.

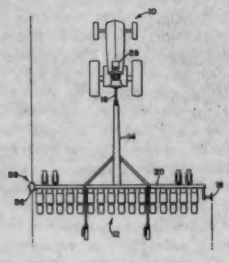
Filed September 12, 1980, Ser. No. 186,458
Int. Cl.³ H04N 7/18
U.S. Cl. 358—93 **20 Claims**

1. A guidance aid for assisting an operator in guiding a

motorized vehicle pulling an implement pivotally attached thereto for movement about a vertically extending pivot axis, the guidance aid comprising:

means attached to the implement for creating a mark in a terrain surface;

a video camera pivotally mounted on the implement for



converting an image of the mark to electrical image signals indicative thereof;

display means mounted on the vehicle and coupled to the camera for displaying to the operator an image corresponding to the electrical image signals; and

control means for automatically aiming the camera in a fixed predetermined direction with respect to the vehicle.

4,365,269

X-RAY DIAGNOSTIC INSTALLATION COMPRISING A SOLID STATE IMAGE CONVERTER

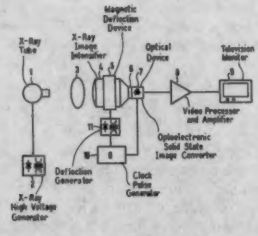
Joerg Haendle, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed June 12, 1981, Ser. No. 273,198

Claims priority, application Fed. Rep. of Germany, July 11, 1980, 3026359

Int. Cl.³ H04N *5/32*

U.S. Cl. 358—111 **2 Claims**



1. An x-ray diagnostic installation comprising: an image intensifier television chain which exhibits an x-ray image intensifier, a television pickup device with an optoelectronic image converter and a monitor, and in which the transmission proceeds according to the interlaced method, a clock pulse generator for defining a scanning rate, the image converter (7) being a solid state image converter controlled for scanning in accordance with said scanning rate, and a deflection device (5) for effecting a deflection of an output image of the x-ray image intensifier (4) synchronously with the scanning rate of said clock pulse generator (10), and operable for periodically effecting a slight displacement of the x-ray image intensifier output image such that the displacement proceeds in a vertical and in a horizontal direction by half the spacing of the image elements of the image converter (7), and means whereby successive fields are displayed on the monitor (9) with a periodic displacement corresponding to the periodic displacement of the output images of the x-ray image intensifier.

4,365,270

DUAL STANDARD VERTICAL DEFLECTION SYSTEM

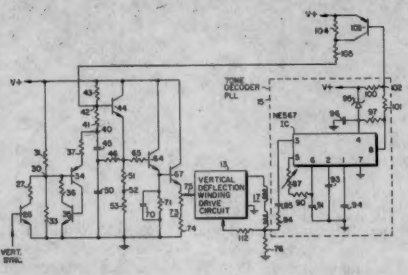
Ernst A. O. Rutishauser, Widen, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed March 31, 1980, Ser. No. 135,557

Claims priority, application United Kingdom, August 23, 1979, 7929379

Int. Cl.³ H04N *5/02*

U.S. Cl. 358—140 **4 Claims**



1. In an image display system for alternatively (1) displaying images in response to composite video signals having a first field frequency and inclusive of vertical synchronizing pulses having a first repetition rate corresponding to said first field frequency, and (2) displaying images in response to composite video signals having a second field frequency, higher than said first field frequency, and inclusive of vertical synchronizing pulses having a second repetition rate corresponding to said second field frequency; a vertical deflection system comprising:

a vertical deflection winding;

means, subject to synchronization by the vertical synchronizing pulses of composite video signals applies to said image display system, comprising oscillator means incorporating a capacitor and charging impedance therefor, for developing vertical scanning current waves for passage through said deflection winding; said current waves having a fundamental frequency corresponding to the repetition rate of the vertical synchronizing pulses effecting synchronization of said developing means; said developing means having a free running frequency lower than said first repetition rate in the absence of said synchronizing pulses;

identifying means, responsive to the field frequency of said current waves for developing an output voltage of a first level when said current waves have said first field frequency, and an output voltage of a second level, different from said first level, when said current waves have said second field frequency;

a switching device, responsive to the output voltage of said identifying means, and exhibiting a first switching state when said output voltage is at said first level, and exhibiting a second switching state when said output voltage is at said second level; and

means responsive to the switching state of said switching device, for altering said capacitor charging impedance of said developing means, in dependence upon said switching state, in such manner that the amplitude of the current waves developed during synchronization of said developing means by pulses of said first repetition rate substantially matches the amplitude of the current waves developed during synchronization of said developing means by pulses of said second repetition rate; said altering means also simultaneously increasing the free running frequency of said developing means to improve synchronization of

said developing means by synchronizing pulses of said second repetition rate.

4,365,271

TELEVISION CAMERA HAVING A BEAM CURRENT CONTROL CIRCUIT

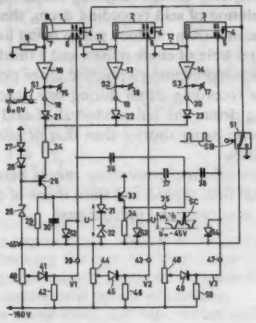
Hendrik Blom, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 958,318, Nov. 11, 1978, abandoned. This application September 26, 1980, Ser. No. 191,099

Claims priority, application Netherlands, December 8, 1977, 7713571

Int. Cl.³ H04N *5/19*

U.S. Cl. 358—219 **4 Claims**



1. A television camera comprising at least one pick-up tube and a control circuit for the intensity control of an electron beam present in the pick-up tube, the electron beam being generated by an electron gun comprising at least a cathode and a control electrode, an output, carrying a picture signal, of the pick-up tube being connected for beam current intensity control to a control input of the control circuit, an output of which, carrying a control signal, being connected to the control electrode in the pick-up tube, the control circuit comprising a setting stage, for an adjustment of the beam current intensity, and a control stage for an automatic control thereof, wherein the control stage comprises, provided between the control input of the control circuit and the output of the control stage, a video frequency picture signal amplifier suitable for processing the picture signal generated by the pick-up tube, said amplifier having an amplitude limiter therein, the output of the control stage being connected through a coupling capacitor to the output of the setting stage and at the same time to the control electrode of the pick-up tube.

4,365,272

TELEVISION CAMERA APPARATUS HAVING AUTOMATIC GAIN-SELECTING UNIT

Kiyotake Nagai, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed 1981, Ser. No. 227,325

Claims priority, application Japan, 1980, 55-6466

Int. Cl.³ H04N *5/26*

U.S. Cl. 358—228 **5 Claims**

1. A television camera apparatus comprising:

a lens device including a servo-controlled lens-iris and means for producing a variable value signal according to the iris value of said lens-iris;

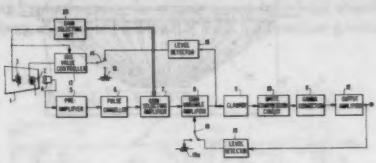
pick-up means adapted to receive the light passed through said lens device for generating a video signal in response to said light;

a gain-selecting amplifier for amplifying said video signal;

means for detecting a signal level of the video signal amplified by said gain-selecting amplifier;

means for controlling the iris value of said lens-iris in response to the signal level detected by said detecting means;

means for determining whether said iris value signal lies within a range of predetermined levels corresponding to a predetermined range of iris values to produce an output



when said iris value signal falls outside of said range of predetermined levels; and

means for selecting the gain of said gain-selecting amplifier according to the output of said determining means such that said iris value signal goes back within said range of predetermined levels.

4,365,273

PICTURE DATA COMPRESSING METHOD

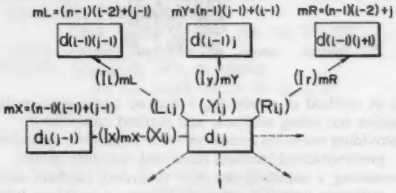
Mitsuhiko Yamada, and Toshiaki Nakade, both of Kyoto, Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed October 29, 1980, Ser. No. 201,732

Claims priority, application Japan, November 5, 1979, 54-142904

Int. Cl.³ H04N *7/12*

U.S. Cl. 358—260 **5 Claims**



1. A method for compressing picture data, wherein an original picture is scanned photoelectrically to obtain analog picture signals which are converted in an analog-digital converter into picture data to be transmitted or stored in a memory, comprising the steps of:

(a) comparing each of a matrix of picture data having addresses with an adjacent picture data in horizontal, vertical, right upper diagonal and left upper diagonal directions to obtain comparison results; and

(b) skipping either each picture data or its adjacent picture data according to the comparison results when the two picture data have the same value, to obtain compressed data consisting of representative data which cannot be skipped.

4,365,274

ONE-DIMENSIONAL IMAGE SENSOR

Mutsuo Takenouchi, and Shigeru Sadamatsu, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed April 16, 1980, Ser. No. 140,910

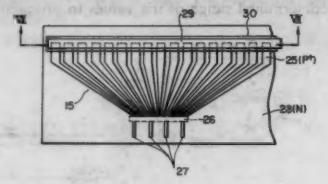
Claims priority, application Japan, April 24, 1979, 54-49701

Int. Cl.³ H04N *1/10*

U.S. Cl. 358—293 **11 Claims**

1. A one-dimensional image sensor comprising: integrated drive circuit elements formed in a relatively small region of a semiconductor monocrystalline substrate; lead electrodes ex-

tending in a divergent manner from said drive circuit elements in a surface of said substrate, said lead electrodes each having a picture element size belt-shaped electrode at an end portion



thereof; a photoconductive non-crystalline film formed on said substrate in a predetermined region so as to cover said belt-shaped electrodes; and a light transmissive electrode layer provided on said photoconductive non-crystalline film.

4,365,275

METHOD FOR PRODUCING IMAGES ON RADIATION SENSITIVE RECORDING MEDIUMS

Richard M. Berman, and Ernest B. Feldgus, both of Dresher, Pa., assignors to Delta Scan, Inc., Willow Grove, Pa.

Filed May 8, 1981, Ser. No. 261,957

Int. Cl.³ H04M *1/40*

U.S. Cl. 358—283 **12 Claims**

1. A method of producing a desired image on a radiation sensitive recording medium, said method comprising:

providing radiation means operable to produce radiation at a predetermined location from said radiation means;

mounting a radiation sensitive recording medium and said radiation means to provide relative movement between said recording medium and said radiation means so that respective portions of said recording medium are presented at said predetermined location from said radiation means;

operating said radiation means as said radiation means and said recording medium move relative to one another to expose said recording medium with radiation in a pattern of dot areas to produce an image, at least one of said dot areas including at least one subdot area having a density which is below a predetermined value; and

thereafter manipulating at least one portion of said at least one subdot area of said at least one dot areas so as to modify the size of said at least one dot area to thereby produce the desired image.

4,365,276

COPY MAGNIFICATION CHANGE APPARATUS IN MAGNETIC COPYING MACHINE

Norio Kokaji, and Kunio Kinoshita, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed March 25, 1980, Ser. No. 133,861

Claims priority, application Japan, March 26, 1979, 54-035359

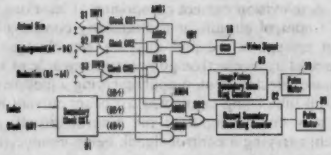
Int. Cl.³ H04N *1/28*; G03G *19/00*

U.S. Cl. 358—301 **6 Claims**

1. A copy magnification change apparatus in a magnetic copying machine in which light from a document is converted into an electrical video signal by photoelectric converting means, said video signal being supplied to a magnetic head, which is moved along the axial direction of a magnetic recording drum to form a magnetic latent image on said magnetic recording drum, said copy magnification change apparatus comprising:

(a) a first clock pulse generating means for generating in accordance with the rotation of said magnetic recording drum, an index pulse representing one revolution of said magnetic recording drum, a first train of clock pulses for an actual size copy operation, each representing a position of the periphery of said magnetic recording drum during one revolution of said magnetic recording drum, and a second train of clock pulses each representing a position of the periphery of said magnetic recording drum during one revolution of said recording drum, the pulse interval of said second train of clock pulses being longer than that of said first train of clock pulses, and a third train of clock pulses each representing a position of the periphery of said magnetic recording drum during one revolution of said recording drum, the pulse interval of said third train of clock pulses being shorter than that of said first train of clock pulses;

(b) said photoelectric converting means being coupled to one of said first, second and third trains of clock pulses to read out said electrical video signal;



(c) a second clock pulse generating means for generating, on the basis of said index pulse, a fourth train of clock pulses having a pulse number for actual size copy operating to control a movement length of said magnetic head, a fifth train of clock pulses whose pulse number is larger than that of said fourth train of clock pulses, a sixth train of clock pulses whose pulse number is smaller than that of said fourth train of clock pulses;

(d) a drive source for moving said magnetic head along the axial direction of said magnetic recording drum for every one line read-out of said photoelectric converting means and for controlling the movement length of said magnetic head on the basis of pulse number;

(e) a selecting means for selectively outputting said first train of clock pulses from said first clock pulse generating means and said fourth train of clock pulses from said second clock pulse generating means in actual-size copy operation, said second train of clock pulses from said first clock pulse generating means and said fifth train of clock pulses from said second clock pulse generating means in enlargement copy operations and said third train of clock pulses from said first clock pulse generating means and said sixth train of clock pulses from said second clock pulse generating means in reduction copy operation.

4,365,277
DEVICE FOR DETECTING THE POSITION OF A TAPE IN A MAGNETIC TAPE RECORDING AND/OR REPRODUCING APPARATUS

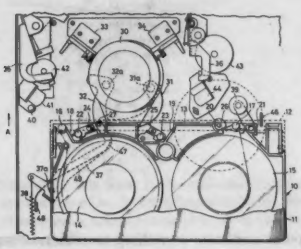
Yasuomi Namiki, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed December 27, 1979, Ser. No. 106,883

Claims priority, application Japan, December 28, 1978, 53-163752

Int. Cl.³ G11B *15/60, 15/43, 15/44, 15/52*

U.S. Cl. 360—72.1 **8 Claims**



1. A device for detecting the position of a magnetic tape in a recording/reproducing apparatus including drawing out means for drawing the tape out from a tape cassette, the tape having a layer of magnetic material on a side facing outwardly from said cassette, said device comprising:

means for transporting said tape within said cassette during a fast forward or rewind mode, said tape being drawn outside said cassette by the drawing out means during operation in either a recording or reproducing mode;

tape guide pole means for making contact with a side of said tape which is opposite the side having the magnetic layer thereon, said tape guide pole means entering into the tape cassette when it is placed in an operational position, and for making contact with said opposite side of the tape;

tension arm means having said tape guide pole means thereon, said tension arm means being located at a first position where the tape guide pole means contacts the tape within the cassette during the fast forward or rewind mode and moving to a second position so that the tape guide pole means contacts the tape drawn out from the cassette during the recording or reproducing mode, said tape guide pole means acting as a tension pole when the tension arm means is at said second position; and

detection heads embedded in a side of said tape guide pole means for making contact with said opposite side of said tape for detecting a tape position designating signal recorded on said magnetic layer, and said detection head being operative during said fast forward, rewind, recording and reproducing modes, said tape guide pole means having an inclined top guide part for guiding and directing said magnetic tape to make contact with the detection head when said cassette is placed in the operating position of said recording reproducing apparatus.

4,365,278
DEVICE FOR DETECTING NON-RECORDED PORTIONS ON MAGNETIC TAPE

Yoshiyuki Takizawa; Takashi Kashiwazaki; Koji Shimoda, and Kazumi Kuriyama, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

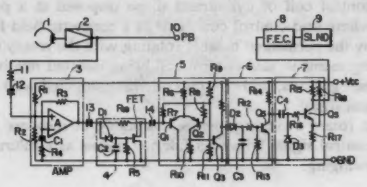
Filed August 29, 1980, Ser. No. 182,744

Claims priority, application Japan, August 31, 1979, 54/111863

Int. Cl.³ G11B *15/18, 17/00*

U.S. Cl. 360—73 **10 Claims**

1. A device for detecting non-recorded portions on a magnetic tape and for operating a solenoid for controlling the running speed of the tape comprising: an amplifying circuit for amplifying a signal from a playback head in a tape recorder, said signal from said playback head having different amplitudes for recorded and non-recorded portions on said magnetic tape; a malfunction preventing circuit having an input coupled to an output of said amplifying circuit, said malfunction preventing circuit passing an output signal from said amplifying circuit to an output terminal of said malfunction preventing



circuit when said output signal has an amplitude level above a predetermined level for at a predetermined period of time, and said malfunction preventing circuit comprising means for varying an impedance between said output terminal and a reference terminal in response to the amplitude of said output signal; and means for operating said solenoid in response to a signal produced on said output terminal of said malfunction preventing circuit.

4,365,279
MAGNETIC RECORDING AND REPRODUCING APPARATUS WITH DEVICE FOR TRACKING CONTROL OF ROTARY MAGNETIC HEADS

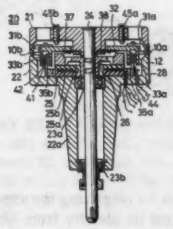
Hisao Kinjo, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed August 18, 1980, Ser. No. 178,852

Claims priority, application Japan, August 21, 1979, 54-106451; August 22, 1979, 54-106862

Int. Cl.³ G11B *21/18, 21/10, 5/52*

U.S. Cl. 360—109 **7 Claims**



1. A magnetic recording and reproducing apparatus comprising:

a rotary swinging member rotating unitarily with a rotary shaft, said rotary swinging member having integrally therewith a pair of arcuate yoke parts at positions which are opposed in a diametric direction of a rotating plane of the rotary swinging member about a rotation center thereof, said yoke parts having U-shaped cross sections and accordingly having respective grooves therealong;

permanent magnets respectively fixed to said pair of yoke parts in a state where their opposite polarities are opposed, said permanent magnets being respectively fixed to inner wall surfaces of said grooves;

a pair of rotary magnetic heads supported on the rotary swinging member at positions opposed in a diametric direction of a rotating plane of the rotary swinging mem-

ber about a rotation center thereof in a state where tips of said heads project outwards from outer surface of the yoke parts;

fulcrum means for supporting said rotary swinging member in a freely swinging manner and acting as a fulcrum for swinging, said fulcrum being in a direction perpendicular, at a rotation center, to a line connecting said pair of rotary magnetic heads; and

a control coil of cylindrical shape disposed at a position where said control coil exists in a magnetic field formed by the permanent magnet rotating with the rotary swinging member, said control coil being inserted relatively in said grooves, said control coil being supplied with a control signal;

said rotary swinging member swinging in response to the control signal with said fulcrum means as a fulcrum for swinging.

4,365,280

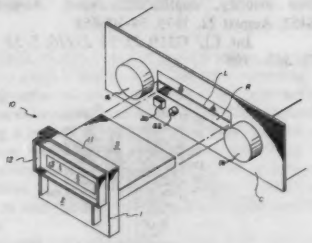
ESCUTCHEON SIMULATIVE OF A RADIO FOR DISGUISING ELECTRONIC APPARATUS

Stephen M. Crosetti, and Michael A. Crosetti, both of Oakland, Calif., assignors to Bicro, Incorporated, Oakland, Calif.

Filed August 4, 1980, Ser. No. 174,863

Int. Cl.³ G12B *1/00*; F41H *3/00*

U.S. Cl. 360—137 **13 Claims**



1. An escutcheon for disguising the appearance of electronic apparatus to conceal its identity from observation, said electronic apparatus having exposed functional indicia and operator controls from which its identity can be determined by observation, the escutcheon comprising:

a face plate configurated and dimensioned so that, when anchored to the electronic apparatus, it covers against observation of functional indicia and operator controls from which the identity of said electronic apparatus can be determined;

indicia disposed on the face plate so as to be exposed for observation when said face plate is anchored to the electronic apparatus, said indicia representing a radio tuning dial indicator;

and anchor means attached to the face plate for removably anchoring said face plate to the electronic apparatus to cover against observation of functional indicia and operator controls from which the identity of said electronic apparatus can be determined by observation, whereby the appearance of said electronic apparatus is disguised as a radio to conceal its identity from observation.

4,365,281

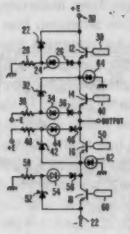
PROTECTION CIRCUIT FOR SWITCHING TRANSISTORS SERIALLY CONNECTED BETWEEN A D.C. VOLTAGE SOURCE

Richard H. Baker, Bedford, Mass., assignor to Reliance Electric Company, Cleveland, Ohio

Filed June 18, 1980, Ser. No. 160,828

Int. Cl.³ H02H *9/04*

U.S. Cl. 361—91 **22 Claims**



1. A bipolar nonlinear switching amplifier, comprising:

first through fourth like conductivity transistor switch means having a main current conduction path connected serially, each having a base, collector, and emitter electrodes;

a source of voltage E_1 being applied to a first end of said serial combination, a second source of voltage E_2 being applied to a remaining end of said serial combination;

an output terminal connected to the common connection of said second and third transistor switch means;

diode means coupled to a common connection of the emitter and collector of the first and second transistor switch means and the third and fourth transistor switch means;

voltage sensing means for each respective transistor of the first and second transistor switch means and the third and fourth transistor switch means, responsive to a voltage Vce developed between the emitter and collector electrodes of a respective transistor, each said sensing means providing a first control signal whenever said voltage Vce is less than a predetermined value and providing a second control signal whenever said voltage Vce is equal to or greater than said predetermined voltage;

logic controller means, operable for selectively providing a drive signal to the base electrode of each transistor switch means rendering it substantially conductive upon a concurrent condition of:

(a) a first control signal being provided for a respective transistor and

(b) conduction through one other of said first through fourth transistor switch means providing a voltage at said output terminal about equal to either E_1 or E_2.

4,365,282

OVERVOLTAGE PROTECTOR USING VARISTOR INITIATED ARC

John P. Brainard, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

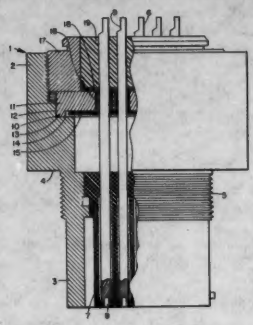
Filed 1980, Ser. No. 121,566

Int. Cl.³ H02H *9/04*

U.S. Cl. 361—127 **11 Claims**

1. An electrical overvoltage protection device comprising first electrically conductive means for carrying an electric signal subject to overvoltage; second electrically conductive means spaced from said first means a minimum distance X for dissipating the overvoltage; insulator means forming with said first and second conductive means an enclosure; and means within the enclosure for conducting the overvoltage consisting of at least one element of non-electroded varistor material in

essentially only point or line contact with and providing a first high impedance current path between said conductive means, said material including no element having a minimum cross-



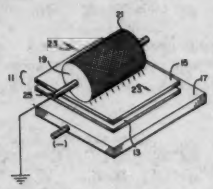
sectional dimension less than 0.2X, and an arc-sustaining gas providing a secondary lower impedance current path between said conductive means when initiated by arcs that form at said point or line contacts.

4,365,283

CORONA DISCHARGE POLING PROCESS

Peter F. Radice, King of Prussia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed October 16, 1980, Ser. No. 197,466
Int. Cl.³ H01F *1/02*
U.S. Cl. 361—233 **18 Claims**



1. A process for poling polymer pellicles to impart piezoelectric activity to the pellicles comprising subjecting a multilayer of pellicles of which at least one is a PES pellicle and at least one other of which is a companion pellicle to a corona discharge between a pair of electrodes of which at least one such electrode has a textured surface.

4,365,284

RESISTOR MODULE

Katsuo Tanaka, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed April 11, 1980, Ser. No. 139,167
Claims priority, application Japan, April 27, 1979, 54-52122
Int. Cl.³ H01C *1/14*
U.S. Cl. 361—395 **5 Claims**

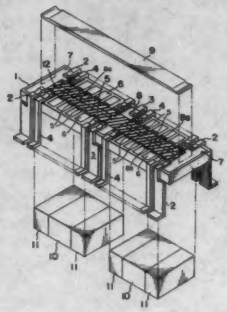
1. A resistor module for use with printed circuit boards to increase the element density thereof and to make probing of the module for measuring easy comprising:

a plurality of resistors formed on one surface of an insulated substrate, a connecting conductor pattern, and leads also formed on said insulated substrate for external connection of the resistors;

the plurality of resistors each being connected at one end to an external connection lead and connected together at the other end to a common terminal of the connecting conductor pattern;

an insulating layer provided over the ends of the resistors and being substantially wider than the common terminal connection of the conductor pattern so that said insulating layer completely covers the common terminal connection and also overlaps the common ends of the plurality of resistors connected said common terminal; and

a conductor bar of a width greater than that of the common terminal and yet not as wide as said insulating layer pro-



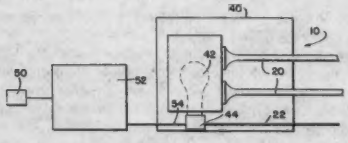
vided on the insulating layer to be connected with a power source pattern or grounding pattern of the printed circuit board, the conductor bar thus providing a wide probing contact surface substantially wider than the common terminal along the entire length of the module to permit easy measuring of the individual resistors by a probe having fixed, spaced contacts.

4,365,285

VEHICULAR SEAT BELT APPARATUS (LITE-A-BELT)

Larry G. Brundidge, 481 45th Pl., NE., Salem, Oreg. 97301

Filed March 20, 1981, Ser. No. 245,825
Int. Cl.³ B60R *21/10*; F21V *33/00*; F21L *15/20*
U.S. Cl. 362—32 **6 Claims**



1. Improved vehicular seat belts comprising

a pair of seat belt elements forming a safety seat belt apparatus for a vehicle,

a light source means selectively energized to emit light,

a fiber optic cord means disposed along a length of at least one of said seat belt elements and receiving emitted light from said light source and displaying said light onto terminal or buckle members of said seat belt elements, and

switch means for selectively energizing said light source.

4,365,286

AUDIO-FREQUENCY POWERLINE CARRIER CONTROL SYSTEM WITH A CURRENT SUPERVISORY DEVICE

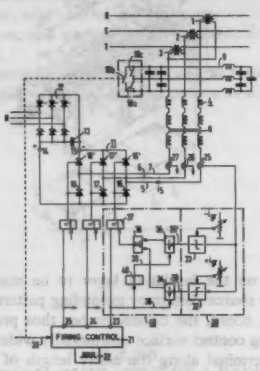
Karl Klausecker, Erlangen, and Manfred Müller, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed March 3, 1981, Ser. No. 239,976

Claims priority, application Fed. Rep. of Germany, March 5, 1980, 3008480

Int. Cl.³ H02H 7/122

U.S. Cl. 363—58 **8 Claims**



1. In an audio-frequency powerline carrier control system to be connected to an N-phase alternating current powerline, comprising:

an audio-frequency signal transmitter comprising a controllable inverter with three-phase outputs having an impressed d-c input voltage;

a plurality of current transformers, in a delta configuration, each coupled to a respective phase output of said inverter to feed the transmitted audio-frequency signal in series into the alternating current powerline;

filter circuits in parallel with the current transformers;

an ignition control connected to the inverter and a pulse generator to form ignition control pulses for the inverter to cause the inverter to produce, during a predetermined transmission period, audio-frequency phase voltages at its respective phase outputs, said control including an intervention input for limiting the peak current in order to decrease the voltage time area of the audio-frequency phase voltage in response to an intervention command;

monitoring means determining the phase currents between the inverter and filter circuit adapted to provide an intervention command if a predetermined current limit for the peak current is reached, the improvement comprising:

the monitoring means including a monitoring device connected to each phase output for detecting when the associated inverter phase output current exceeds a threshold current of predetermined magnitude to thereby deliver separate intervention commands for each phase when the phase current exceeds the limit, independently of the other phase currents; and

intervention control means, one for each phase, connected to a corresponding one of the monitoring devices for intervening in the control of the respective inverter phase in response to an intervention command from a respective monitoring device, said intervention control means adapted to apply a d-c voltage component to the respective inverter output phase by decreasing the voltage-time area of the inverter phase output voltage half-cycle whose polarity corresponds to the sign of the peak, as compared to the average voltage-time area of such a half-cycle in the case of non-intervention.

4,365,287

SWITCHING DEVICE

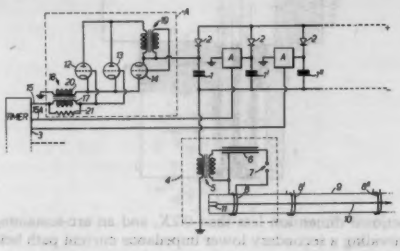
Leslie J. Kettle, Chelmsford, and Barry P. Newton, Boreham, both of England, assignors to English Electric Valve Company Limited, Chelmsford, England

Filed September 8, 1980, Ser. No. 185,383

Claims priority, application United Kingdom, September 7, 1979, 7931073

Int. Cl.³ H03K 3/53

U.S. Cl. 363—94 **4 Claims**



1. A switch device comprising:

two switches connected in parallel in a first electric path;

a timing device for feeding at a required time a switching impulse along a second electric path to said switches thereby switching at least one of them to a conductive state so that current flows along the first path;

and a transformer having a primary in said first path and a secondary in said second path;

said transformer, said switches and said timing device being interconnected for causing the current flow created by switching of one of said switches to induce a further switching impulse or to reinforce the first-recited switching impulse thereby switching or assisting the switching of the other switch to a conductive state.

4,365,288

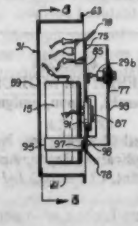
ELECTRIC POWER CONVERTER FOR RECREATIONAL VEHICLE

John K. Robe, Newport Beach, and Robert M. Keranen, Tustin, both of Calif., assignors to Carr-Griff, Fullerton, Calif., a part interest

Filed March 2, 1979, Ser. No. 16,928

Int. Cl.³ H05K 7/20

U.S. Cl. 363—141 **12 Claims**



1. A converter adapted to be mounted within an opening in a wall wherein the wall at least partially defines a structure having an interior, said converter comprising:

a receptacle adapted to be received within the opening in the wall, said receptacle having a rear wall;

a cover plate;

means for attaching said cover plate to said receptacle to permit said cover plate to be opened to provide an opening in the receptacle through which access to the interior

of said receptacle can be obtained, said cover plate being adapted to be exposed in the interior of the structure whereby access can be obtained to the interior of the receptacle from the interior of the structure;

vent opening means in said cover plate whereby ventilation air from the interior of the structure can pass through the receptacle;

a base mounting plate on said receptacle;

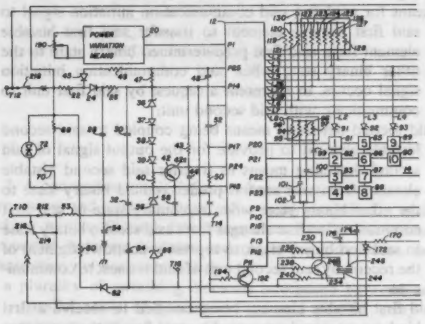
a plurality of circuit elements including a step-down transformer mounted on said base mounting plate, at least a major portion of said transformer being within the interior of said receptacle between said base mounting plate and said rear wall of said receptacle; and

means for releasably mounting said base mounting plate on said receptacle whereby with said cover plate opened said base mounting plate can be removed from said receptacle through the opening in said receptacle to facilitate repair and testing of said plurality of circuit elements.

4,365,289
METHOD AND CONTROL SYSTEM FOR CONTROLLING APPARATUS

James E. Small, Indianapolis, and Mark E. David, New Palestine, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed 1980, Ser. No. 118,470
Int. Cl.[3] G06F *15/46;* G05B *19/10*
U.S. Cl. 364—143 21 Claims



1. A control system for an apparatus having at least one machine function and a cycle of operation associated therewith, comprising:

a central control element for controlling said machine function,

first means for inputting a selection of one of a plurality of fixed periods to said central control element for causing said control element to activate said machine function for said cycle of operation in response to said one period;

manually operable switch means for determining a variable period for said cycle of operation independently of said central control element; and

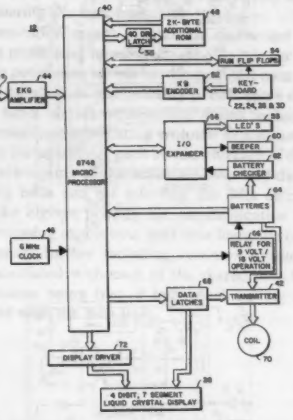
second means for inputting said variable period from said means for determining and into said central control element,

said central control element having information stored therein, said information including said plurality of fixed periods for selection through said first means for inputting and an instruction repertoire for causing said control element to control said machine function in response to either one of said fixed periods or said variable period.

4,365,290
COMPUTER SYSTEM WITH POWER CONTROL CIRCUIT

George E. Nelms, Edina; Thomas C. Barthel, Becker, and William J. Bergland, Fridley, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed March 12, 1979, Ser. No. 19,625
Int. Cl.[3] G06F *01/04;* A61N *01/36*
U.S. Cl. 364—200 22 Claims



1. A computer system energized by a depletable energy source coupled to selectively energize the elements of said computer system, said computer system operable in an off/rest mode, a power down mode, and an operating mode, comprising:

(a) data input means for entering data into said computer system;

(b) decoding means coupled to said data input means and operable in the power down mode for decoding data received from said data input means and for providing a data available manifestation indicative of the availability of decoded data;

(c) actuatable means for providing upon actuation a transition manifestation;

(d) memory means for storing a program;

(e) processor means energized in its operating mode for executing the program to process the decoded data derived from said decoding means; and

(f) power control means coupled to said actuatable means and to said depletable energy source for variously energizing the elements of said computer system in its off/rest mode at a low power level, its power down mode at an intermediate power level, and its operating mode at a high power level, said power control means comprising a storage element continuously energized by said depletable

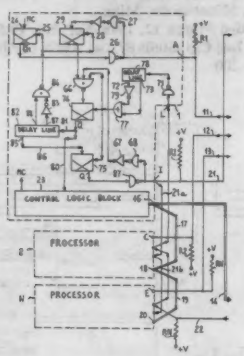
energy source and responsive to the transition manifestation of said actuatable means to dispose said computer system from its off/rest mode to its power down mode wherein said decoding means is energized by said depletable energy source, said power control means coupled to said decoding means and responsive to the data available manifestation to dispose said computer system from its power down to its operating mode, wherein said processor means is energized to execute the stored program.

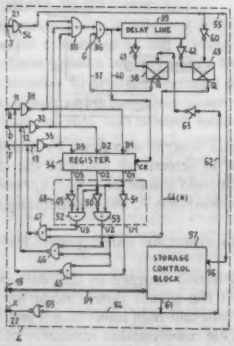
4,365,291

SYSTEM FOR BIDIRECTIONAL TRANSMISSION OF INTERLOCKED SIGNALS

Vittorio Zanchi, Milan, and Tiziano Maccianti, Pregnana Milanese, both of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed May 3, 1979, Ser. No. 35,861
Claims priority, application Italy, May 5, 1978, 23037 A/78
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **2 Claims**





1. In a digital data processing system comprising first and second units of a data processing system, wherein the units communicate with each other by transferring data over communication lines linking together the two units and wherein when communication of data between the units is to occur, said first unit generates a communication initiation signal; an improved interface circuit for providing a dialogue between said units to control communication between said units, comprising in combination:

first and second communication lines extending between said two units;

first and second line drivers disposed respectively in said first and second units, each of said line drivers having an input terminal and an output terminal, the output terminal of each of said line drivers being coupled to a respective end of said first communication line to provide that said first communication line assumes a first binary state when both of said line drivers deliver on the output terminals thereof signals representing the same one of a binary state and assumes a second binary state when either one of said signals delivered by said line drivers does not represent said one binary state;

first and second bistable elements disposed respectively in said first and second units;

means for coupling said first bistable element to said first line driver to supply a signal to the input terminal of said first line driver representative of the binary state of said first bistable element;

means for coupling said second bistable element to said second line driver to supply a signal to the input terminal of said second line driver representative of the binary state of said second bistable element;

said first and second bistable elements in the initial mode of said interface circuit operating in respective first and second predetermined binary states to cause said first driver to deliver a signal which does not represent said one binary state and said second line driver to deliver a signal which represents said one binary state;

first and second detecting means disposed respectively in said first and second units, each of said detecting means being coupled to sense the binary state of said first communication line and to generate an output signal representing the binary state sensed thereby;

means for applying said communication initiation signal to said first bistable element to transfer said first bistable element from said first predetermined binary state to the other binary state when said communication initiation signal occurs, to represent a request by said first unit to communicate with said second unit;

said second detecting means being coupled to said second bistable element to provide for the output signal of said second detecting means to transfer said second bistable element from said second predetermined binary state to the other binary state when the binary state of said first communication line changes from said second binary state to said first binary state, to represent acknowledgment of the receipt by said second unit of said request to communicate;

said first bistable element being coupled to receive a first kind output signal generated by said first detecting means when said first communication line changes from said first binary state to said second binary state, said first bistable element changing from said other binary state thereof to said first predetermined binary state upon the occurrence of said first kind output signal;

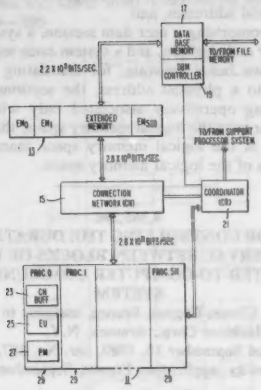
a third line driver disposed in said first unit, said third line driver having an input terminal and an output terminal, the output terminal of said third line driver being coupled to one end of said second communication line, said third line driver being coupled to receive said first kind output signal and responsive to said first kind output signal to cause said second communication line to assume a first binary state thereof for initiating the communication requested by said first unit; and

a third detecting means disposed in said second unit, said third detecting means being coupled to sense the binary state of said second communication line and to generate an output signal representing the binary state sensed thereby, said third detecting means being coupled to said second bistable element to provide for the output signal of said third detecting means to transfer said second bistable element from said other binary state thereof to said second predetermined binary state when said communication line changes to said first binary state thereof.

4,365,292
ARRAY PROCESSOR ARCHITECTURE CONNECTION NETWORK

George H. Barnes; Stephen F. Lundstrom, both of Wayne, and Philip E. Shafer, Holmes, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed November 26, 1979, Ser. No. 97,419
Int. Cl.[3] G06F *13/06*
U.S. Cl. 364—200 5 Claims



1. A connection network for use between a parallel array of processors and a parallel array of memory modules for establishing non-conflicting data communications paths between requested memory modules and requesting processors, said connection network comprising:

a plurality of switching elements interposed between said parallel array of processors and said parallel array of memory modules in an Omega networking architecture wherein each switching element includes:

a first and a second processor side port;

a first and a second memory module side port;

control logic means for providing data connections between said first and second processor ports and said first and second memory module ports, said control logic means including:

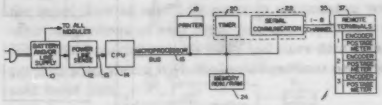
strobe means for examining data arriving at said first and second processor side ports to indicate when said arriving data describes a request for connection from a requesting processor to a requested memory module, each said request for connection from a requesting processor of said parallel array of processors being independent as to synchronism with requests for connection from other requesting processors of said last mentioned array; and

connection means associated with said strobe means for examining requesting data arriving at said first and said second processor ports for providing a data connection therefrom to said first and said second memory module ports in response thereto when said data connection so provided does not conflict with a pre-established data connection currently in use whereby non-conflicting data communications paths are established between requesting processors and requested memory modules.

4,365,293
SERIAL COMMUNICATIONS BUS FOR REMOTE TERMINALS

Earl B. Holtz, Huntington, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed March 28, 1980, Ser. No. 134,739
Int. Cl.[3] G06F *3/04*
U.S. Cl. 364—200 8 Claims



1. A postage data processing system including a plurality of remote postage data entry stations, said system comprising:

(a) main processing means for maintaining a record of postage data;

(b) a serial data bus, the data bus including a plurality of first status lines for initiating communication, each of the status lines being operatively connected to a different entry station and a plurality of shared data lines for data transfer between each of the entry stations and the main processing means, each entry station being operatively connected to and sharing the data lines; and

(c) communication means operatively connected between the main processing means and said data bus for allowing said main processing means to communicate over said data bus with only one of said plurality of data entry stations at a given time, said communication means including controller means communicating with the first status lines for assigning the priority of each of said plurality of data entry stations attempting to communicate over said data bus on a rotating basis and for selecting the data entry station having the highest priority for communication with the main processing means over said data lines, the communication means further including common driving circuit means associated with each of the shared data lines, the entry stations being free of individual driving circuitry associated with the data lines.

4,365,294
MODULAR TERMINAL SYSTEM USING A COMMON BUS

Richard A. Stokken, Attleboro, Mass., assignor to Nizdorf Computer Corporation, Burlington, Mass.

Filed April 10, 1980, Ser. No. 138,957
Int. Cl.[3] G06F *15/16, 13/00*
U.S. Cl. 364—200 67 Claims

1. A modular data processing system having a plurality of discrete functional modules, said system comprising:

a first central processing unit (CPU) (22) on one circuit board;

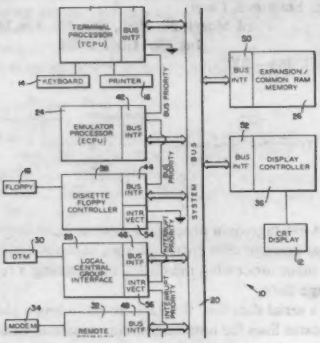
at least one slave module (24, 26, 28, 32, 36) on another circuit board;

a system bus (20) to which the circuit boards of the first CPU and slave module are pluggably connected, operative to provide a communication link between the CPU and slave module;

CPU bus interface means (40) on said one circuit board for supplying address, data, and command signals over the bus to the slave module;

slave module bus interface means (171) on said another circuit board for supplying an operation acknowledge signal to the CPU over the bus after a predetermined delay time associated with the time necessary for the slave module to complete a particular command operation; and

bus time out means (110) in the CPU on said one circuit board for detecting when the operation acknowledge



signal has not been received from the slave module over the bus within a predetermined period of time.

4,365,295

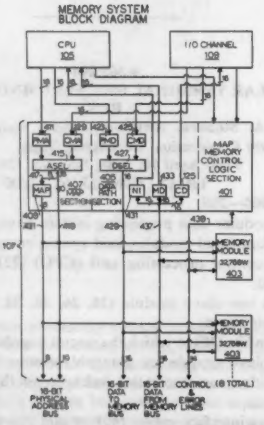
MULTIPROCESSOR SYSTEM

James A. Katzman, San Jose; Joel F. Bartlett, Palo Alto; Richard M. Bixler, Sunnyvale; William H. Davidow, Atherton; John A. Despotakis, Pleasanton; Peter J. Graziano; Michael D. Green, both of Los Atlos; David A. Greig; Steven J. Hayashi, both of Cupertino; David R. Mackie, Ben Lomond; Dennis L. McEvoy, Scotts Valley; James G. Treybig, and Steven W. Wierenga, both of Sunnyvale, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Division of Ser. No. 721,043, Sep. 7, 1976, Pat. No. 4,228,496. This application May 6, 1980, Ser. No. 147,309

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **7 Claims**


MEMORY SYSTEM BLOCK DIAGRAM
CPU 105
I/O CHANNEL 109
MAP MEMORY CONTROL LOGIC SECTION 401
MEMORY MODULE 32768W 402
MEMORY MODULE 32768W 403
16-BIT PHYSICAL ADDRESS BUS
16-BIT DATA TO MEMORY BUS
16-BIT DATA FROM MEMORY BUS
CONTROL & ERROR LINES (8 TOTAL)

1. A memory system for providing complete isolation of user data, system data, user code and system code without the need for protection limit registers or protection keys in a multiprocessor system of the kind in which separate processor modules operate concurrently and cooperatively for system control and for application processing of user programs and wherein each processor module comprises a central processing unit, an input/output channel and a main read-write memory,

said memory system comprising

physical memory including physical address means for accessing words of the physical memory with a unique physical address,

logical address means for organizing the physical memory into a logical memory space and dividing the logical memory space into a logical user data area, a logical system data area, a logical user code area and a logical system code area, each of the four logical areas being logically separate and distinct from the other logical areas by means of a logical address which corresponds to a physical address,

port means for permitting a central processing unit and an input/output channel to access the physical memory by use of the logical addresses, and

map means comprising a user data section, a system data section, a user code section, and a system code section, each of said sections being separate, for translating each logical address into a physical address, the sections of the map means being operatively associated only with the corresponding area of the logical memory space, thereby making each area of the logical memory space inaccessible from other areas of the logical memory space.

4,365,296

SYSTEM FOR CONTROLLING THE DURATION OF THE TIME INTERVAL BETWEEN BLOCKS OF DATA IN A COMPUTER-TO-COMPUTER COMMUNICATION SYSTEM

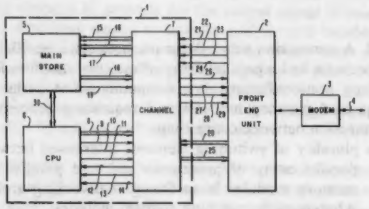
Siegfried W. Ulmer, Cagnes, France, assignor to International Business Machines Corp., Armonk, N.Y.

Filed September 15, 1980, Ser. No. 187,122

Claims priority, application France, September 28, 1979, 79 24578

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **4 Claims**



1. In a communication system of the type that comprises a computer connected to a transmission medium through a front-end communication unit and which transmits data blocks separated from each other by an interval, a system for controlling the duration of said interval, characterized in that it comprises:

transfer means located in the computer for sending a first data block to the front-end unit,

means located in the front-end unit for sending said first data block over the transmission medium,

end means located in the front-end unit for sending to the computer a first end indication that said first data block has been transmitted,

means located in the computer for sending to the front-end unit, in response to said first indication, a command specifying the duration of the time interval which is to separate the transmission of said first data block from that of a next data block,

timing means located in the front-end unit, and

means located in the front-end unit for decoding said command and activating said timing means to cause same to determine a time interval whose duration is equal to that specified by said command, said end means being caused

to send to the computer a second end indication when the time interval determined by said timing means has expired, and said transfer means being responsive to said second end indication

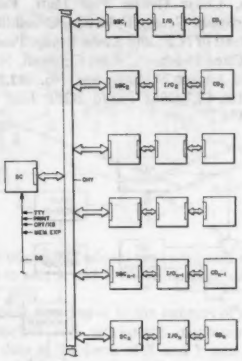
for sending a second data block to the front-end unit, in order that said second block may be sent over the transmission medium by said front-end unit.

4,365,297

INDUSTRIAL CONTROL SYSTEM WITH DISTRIBUTED COMPUTER IMPLEMENTED LOGIC

James S. Grisham, Jr., Arlington, Tex., assignor to Forney Engineering Company, Carrollton, Tex.

Filed December 29, 1980, Ser. No. 221,328
Int. Cl.³ G06F *9/40, 7/00, 15/16, 15/46*
U.S. Cl. 364—200 **8 Claims**



1. A computer system for setting a plurality of output signals in accordance with input data and logic functions operating upon said data in accordance with interconnections directed by the user of said computer system comprising:

a first memory having a set of logic input locations for storing input data and a set of logic output locations to store output data,

program storage means containing program instructions including an applications set of instructions and a patch panel set of instructions,

computer means to obtain and execute said instructions in a repeated program sequence alternately cycling through said patch panel set of instructions and said applications set of instructions,

said applications set of instructions causing said computer means to carry out a multiplicity of logic functions on the data stored in said logic input locations and to store data in said logic output locations in accordance with said data in said logic input locations and the logic functions performed on the data in said logic input locations, each of said logic functions having at least one input location assigned exclusively thereto and one logic output location assigned exclusively thereto,

a plurality of I/O ports for receiving input data and for storing output data to set output conditions at said I/O ports,

a patch panel memory having a plurality of memory locations, each memory location having a FROM section and a TO section adapted to store addresses of said I/O ports, said logic input locations, and said logic output locations, whereby the user of the system can specify connections by the addresses stored in said patch panel memory from said I/O ports to the inputs of said logic functions, from the outputs of said logic functions to said I/O ports, and from the output of said logic functions to the inputs of said logic functions,

said patch panel set of instructions causing said computer means to read out the addresses stored in sequential memory locations of said patch panel memory in sequence and to read the data selected by the addresses stored in the FROM sections and to store data in accordance therewith at the addresses selected by the corresponding TO sections;

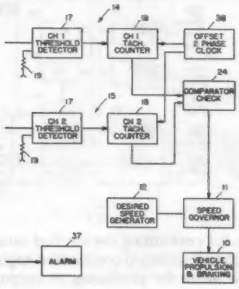
whereby said computer means by alternately cycling through said patch panel set of instructions and said applications set of instructions will perform logic functions on the input data at said I/O ports in accordance with the interconnections of said logic functions specified by the user in said patch panel memory and store data at said I/O ports in accordance with the logic functions performed on said input data.

4,365,298

SPEED CONTROL SYSTEMS FOR GOVERNING THE SPEED OF A VEHICLE

Henry C. Sibley, Adams Basin, and David B. Rutherford, Jr., Rochester, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed May 5, 1980, Ser. No. 146,884
Int. Cl.³ B60K *31/00;* G05D *13/62*
U.S. Cl. 364—426 **10 Claims**



1. A speed control system for governing the speed of a vehicle comprising tachometer signal generating means for generating a tachometer signal having a frequency characteristic of the actual speed of the vehicle, desired speed signal generating means for generating a signal indicative of a desired speed for the vehicle, and vehicle control means governed jointly by the tachometer signal generating means and the desired speed signal generating means for governing the speed of the vehicle, wherein improved tachometer signal checking means comprises:

(a) first and second parallel connected channel means responsive to the tachometer signal for checking that tachometer pulses are enough above a threshold detector value to assure accurate calculation of the actual speed of the vehicle when counting the tachometer pulses,

(b) each of the channel means comprising in series operational amplifier means, threshold detector means, and tachometer pulse counting means for counting tachometer pulse outputs of each of the channels,

(c) biasing means for each of the threshold detector means for requiring a minimum amplitude tachometer pulse input to each threshold detector means to deliver an output to the pulse counting means of the associated channel,

(d) tachometer pulse attenuating means for acting on tachometer pulse inputs in each of the channels for periodically testing that attenuated tachometer pulses are at least above the threshold setting of the threshold detector for the associated channel,

(e) attenuation enabling means for selectively rendering the

attenuating means effective for the respective channels during predetermined intervals, and

(f) comparator check means for checking that the substantially same number of tachometer pulses is counted by both channels before permitting the count of the tachometer pulses to normally generate an output enabling continued progress of the vehicle.

4,365,299

METHOD AND APPARATUS FOR CONTROLLING AIR/FUEL RATIO IN INTERNAL COMBUSTION ENGINES

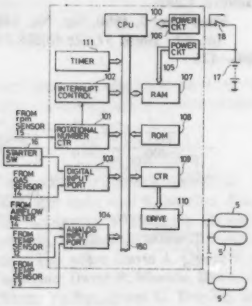
Toshio Kondo, Anjo; Akio Kobayashi; Tomomi Eino, both of Kariya, and Masahiko Tajima, Takahama, all of Japan, assignors to Nippondenso Company, Limited, Kariya, Japan

Filed August 26, 1980, Ser. No. 181,342

Claims priority, application Japan, October 10, 1979, 54-131062

Int. Cl.³ F02B *3/04;* F02M *7/20*

U.S. Cl. 364—431.06 **11 Claims**



7. Apparatus for controlling the air/fuel ratio of an air/fuel mixture supplied to an internal combustion engine, comprising:

(a) an airflow meter for producing an output signal indicative of the flow rate of the intake air supplied to said engine;

(b) an intake air temperature sensor for producing an output signal indicative of the temperature of the intake air of said engine;

(c) a coolant temperature sensor for producing an output signal indicative of the temperature of the coolant of said engine;

(d) a gas sensor for producing an output signal indicative of the concentration of a given gas in the exhaust gases of said engine;

(e) a rotational speed sensor for producing an output signal indicative of the engine rpm;

(f) fuel injection valves for supplying said engine with fuel in accordance with a driving current; and

(g) controlling means for producing said driving current in accordance with the output signals of said airflow meter, intake air temperature sensor, coolant temperature sensor, gas sensor, and rotational speed sensor, said controlling means including a storage device in which data of correction factors are prestored, said controlling means producing said driving current by: (1) selecting a first correction factor from a plurality of predetermined first correction factors prestored in said storage device, in accordance with the output signals of said intake air temperature and said coolant temperature, (2) determining a second correction factor in accordance with said output signal of said gas sensor, (3) determining third correction factors, each of said third correction factors for a different engine operational condition, some of said third correction factors for engine operational conditions in a given region, in which said engine has been operated, being varied to be increased or decreased in accordance with the value of said second correction factor, remaining third correction factors being maintained unchanged, (4) detecting the state of the variation of said third correction factors, (5) modifying all of said third correction factors stored in said storage device in accordance with the result of the detection of the state of the variation of said third correction factors, (6) producing a pulse train signal in accordance with the output signals of said airflow meter, said rotational speed sensor and with said first, second and third correction factors, and (7) producing said driving current in response to said pulse train signal.

4,365,300

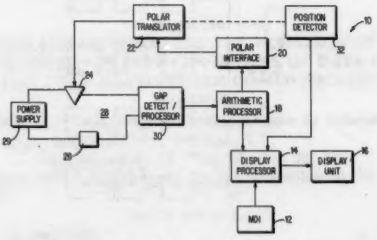
METHOD AND APPARATUS FOR VECTOR MACHINE CONTROL

Lars Johanson, Cedar Grove; Phil Haft, Fairlawn; Frank Bonavita, Carlstadt; George Feldstein, Cresskill; Steve Greenberg, Oradell, all of N.J., and Kevin Brady, Pearl River, N.Y., assignors to Eltee Pulsitron, West Caldwell, N.J.

Filed August 29, 1980, Ser. No. 182,592

Int. Cl.³ G06F *15/46;* B23P *1/08*

U.S. Cl. 364—474 **17 Claims**



14. A method for electric discharge machining utilizing a tool and a table capable of supporting a workpiece, said tool and said workpiece defining an axis having an axial direction, comprising the steps of:

relatively displacing said tool and said workpiece in said axial direction to a first position;

relatively displacing said tool and said workpiece in a first plane perpendicular to said axial direction from said first position along a desired vector angle through a distance equal to a desired vector magnitude, and relatively displacing said tool and said workpiece in a reverse manner so as to return to said first position;

relatively displacing said tool and said workpiece in said axial direction from said first position to a second position; and

relatively displacing said tool and said workpiece in a second plane perpendicular to said axial direction from said second position along a desired vector angle through a distance equal to a desired vector magnitude, and relatively displacing said tool and said workpiece in a reverse manner so as to return to said second position.

4,365,301

POSITIONAL REFERENCE SYSTEM FOR ULTRAPRECISION MACHINING

Jones B. Arnold, Knoxville; Robert R. Burleson, Clinton, and Robert M. Pardue, Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed September 12, 1980, Ser. No. 186,869

Int. Cl.³ G06F *15/46;* G01B *11/02*

U.S. Cl. 364—475 **7 Claims**

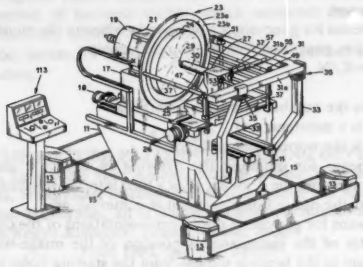
1. In an automatic controlled machining system including a spindle, means for rotating said spindle, a cutting tool holder

for holding a cutting tool, a cross slide means for moving the cutting tool holder reversably along an x axis and an axial slide means for moving one of the spindle and the cross slide means reversably along a y axis, a positional reference system comprising:

a metering bar assembly including X and Y coordinate reflective reference surfaces disposed parallel to the X and Y axis slides of said machining system;

a mounting plate carried by said spindle for supporting a workpiece thereon to be rotated about an axis parallel to said Y axis;

a plurality of interferometers for monitoring the displacement of said tool holder and said mounting plate carried by said spindle at predetermined points thereon relative to



the points of contact of said tool with said workpiece with reference to said X and Y coordinates of said metering bar assembly; and

a control means responsive to the outputs of said plurality of interferometers and workpiece machining contour description data in the form of X and Y axis components of programmed displacement of the cutting tool relative to the centerline of rotation of said spindle for generating x and y axis error signals and applying said signals to the cross slide means and the axial slide means, respectively, so that the cutting tool is positioned relative to the workpiece according to the workpiece description data with positional reference of the tool holder and the workpiece to said metering bar assembly.

4,365,302

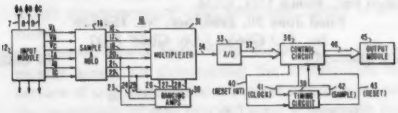
HIGH ACCURACY AC ELECTRIC ENERGY METERING SYSTEM

Robert T. Elms, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed 1981, Ser. No. 224,871

Int. Cl.[3] G01R *21/06*

U.S. Cl. 364—483 **21 Claims**



1. An improved AC electric energy metering system for calculating a plurality of indicia of an AC electric energy quantity delivered by an electric utility system, said metering system comprising:

signal sample means including inputs and outputs, said inputs receiving line voltages and currents determining the magnitude of the AC electric energy quantity, said outputs producing sample values representative of the instantaneous magnitudes of said line voltages and currents when said signal sample means is rendered to a sampling state;

sample timer means producing a sample signal having first and second states, said first state occurring at randomly varying intervals and rendering said signal sample means to said sampling state at randomly occurring sampling times;

analog-to-digital converter means producing binary signal representations of each of said sample values;

control means calculating the plurality of indicia of said AC electric energy quantity from said binary signal representations of each of said sample values, said control means producing a reset interval signal composed of pulses, said pulses resetting said sample timer means;

means resetting said control means when a pulse of said reset interval signal is input to said sample timer means while said sample signal is in said second state;

output means producing data output signals representative of said plurality of indicia of said AC electric energy quantity.

4,365,303

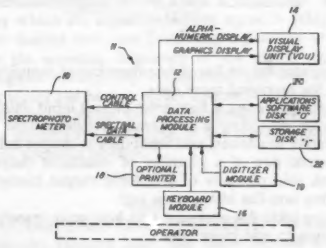
METHOD AND APPARATUS FOR DETERMINING THE NATURE OF AN UNKNOWN CHEMICAL SUBSTANCE

Robert W. Hannah, Newtown; John P. Coates, Easton; Abraham Savitzky, Wilton, all of Conn.; Michael A. Ford, Maidenhead, and Harry V. Carter, Beaconsfield, both of England, assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed 1980, Ser. No. 119,237

Int. Cl.[3] G06F *15/20*; G01N *21/22*

U.S. Cl. 364—498 **31 Claims**



1. Apparatus for determining the nature of an unknown substance comprising, in combination:

means for entering a peak table of the spectrum of an unknown substance into computing apparatus:

means for adjusting said peak table to a first preselected standardized format; said means for adjusting said peak table including means for deleting from the peak table all of the peaks having a transmittance greater than a preselected threshold;

means for comparing the so standardized peak table of the unknown with a first library of chemical structural units contained in memory in said computing apparatus;

means for making a list of the possible chemical structural units most closely corresponding to said unknown substance;

means for readjusting said peak table to a second preselected standardized format; said means for readjusting said peak table including means for deleting from the peak table all peaks having a transmittance greater than a second preselected threshold;

means for forming a file for said unknown substance including data corresponding to said readjusted peak table and to said list of possible chemical structural units;

means for comparing the file of said unknown substance with a second library containing files of known substances contained in memory in said computing apparatus, each known substance having a file containing data corresponding to its respective peak table in said second standardized format and to its respective chemical structural unit; and

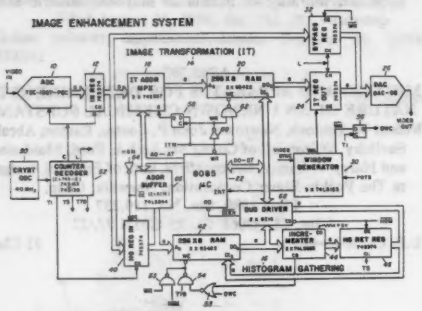
means for outputting a list of known substances which most closely correspond to said unknown substance.

4,365,304

METHOD AND APPARATUS FOR ON-LINE DATA ENHANCEMENT

Smil Ruhman, Rehovot, and Zvi Orbach, Kiryat Ono, both of Israel, assignors to Yeda Research & Development Co., Ltd., Rehovot, Israel

Filed July 16, 1980, Ser. No. 169,490
Claims priority, application Israel, August 27, 1979, 58119
Int. Cl.³ G06F *15/36*; H04N *3/00*
U.S. Cl. 364—515 **19 Claims**



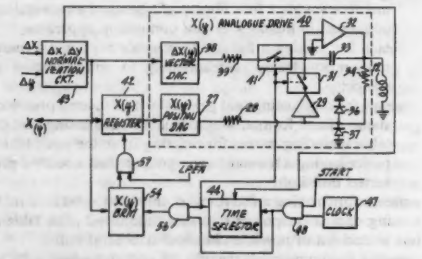
1. Apparatus for on-line data enhancement comprising:
means for receiving input data;
means for gathering a histogram of said input data;
means for providing a histogram transformation function operative to convert said input data to output data having a desired one of a plurality of selectable output histograms, said plurality of selectable output histograms including non-flat histograms; and
a look up table for applying said histogram transformation function to said input data.

4,365,305

VECTOR GENERATOR FOR COMPUTER GRAPHICS

John B. MacDonald, West Windsor Township, Mercer County; John K. Patberg, Cranford Township, Union County, both of N.J., and Jaan Raamot, Broomfield, Colo., assignors to Western Electric Company, Inc., New York, N.Y.

Filed 1981, Ser. No. 222,429
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—521 **7 Claims**



4. A vector generator for use with a computer graphics system of the type wherein a vector is drawn by applying analogue deflexion signals to a display device to deflect an image-writing beam across the face of the display device, and wherein the vector is defined by first digital words defining the planar coordinates of the starting point of the vector and second digital words defining the displacement of the vector from said starting point, which generator comprises:

(a) means for receiving the first digital words, storing them in respective registers and for converting said words into first analogue signals to deflect the image-writing beam to the starting point of a vector to be drawn;

(b) means for receiving the second digital words and for normalizing said second words to values representative of a normalized drawing rate by multiplying them by a normalization factor N;

(c) means for converting the normalized values of the second digital words into second analogue voltages to deflect the image-writing beam at the normalized rate from the starting position towards the end point of the vector to be drawn;

(d) means for generating a pulse train wherein the number of pulses generated follow the relationship

$$P=K/N$$

where:

P is the number of pulses generated;
K is a constant; and
N is the normalization factor;

(e) means for initiating the drawing of a vector and for terminating the drawing after a time interval selected such that the desired displacement is achieved; and

(f) means for providing digital representations of the coordinates of the instantaneous position of the image-writing beam as the beam is moved from the starting point of the vector toward the end point thereof, said digital representations means including respective binary rate multipliers for each coordinate, each binary rate multiplier having a first input coupled to the pulse generating means for receiving input pulses therefrom, a second input coupled to means (b) for receiving therefrom a normalized second digital word, and an output coupled to one of the registers of means (a) to output pulses thereto in accordance with the following relationship:

$$P_o=P_iM/2^n$$

where:

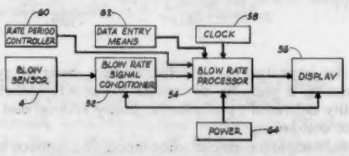
P_o is the number of output pulses;
P_i is the number of input pulses;
M is the value of the normalized second digital word fed to the binary rate multiplier; and
n is the number of bits in said normalized second digital word.

4,365,306

METHOD AND APPARATUS FOR REMOTELY MONITORING AND EVALUATING PILE DRIVING HAMMERS

Horace F. House, Houston, Tex.; Marvin L. Peterson, and Norman W. Hein, Jr., both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed June 30, 1980, Ser. No. 164,636
Int. Cl.³ G06M *3/06*; G06F *7/00*
U.S. Cl. 364—551 **11 Claims**



1. An apparatus for remotely monitoring and evaluating the rate at which a pile driving hammer strikes a pile located in a liquid, said apparatus comprising:

sensing means comprising a hydrophone, disposed in the liquid remotely from the pile driving hammer and the pile, for sensing a pressure wave generated by the pile driving

hammer striking the pile and for generating an analog electrical striking signal proportional to the sensed pressure wave;

electrical signal conditioning means for converting the analog electrical signal to a digital electrical striking signal being electrically connected to said hydrophone;

clock means for providing an electrical timing signal;

integrated circuit computer means, responsive to the digital electrical striking signal and the electrical timing signal, for computing a first value indicating the rate at which the pile driving hammer strikes the pile during a predetermined time period;

switch means, connected to said computer means, for effectively altering the predetermined time period so that said computer means computes a second value indicating the number of hammer strikes which occurred during the effectively altered time period; and

display means for displaying the computed first and second values.

4,365,307

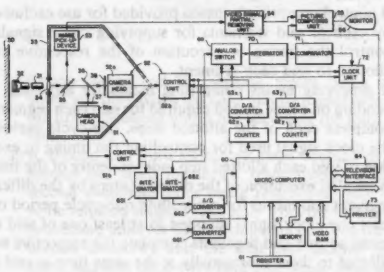
TEMPERATURE PATTERN MEASURING DEVICE

Masao Tatsuwaki; Shin Nemoto, both of Osaka; Yutaka Katayama, Wakayama; Michio Okada, Wakayama, and Kazuyuki Hotta, Wakayama, all of Japan, assignors to Sumitomo Kinzoku Kogyo Kabushiki Gaisha, Osaka, Japan

Filed 1981, Ser. No. 238,357

Int. Cl.³ G01J *5/18*

U.S. Cl. 364—557 **11 Claims**



1. A temperature pattern measuring device for obtaining the surface temperature distribution of an object to be measured, comprising:

a two-dimensional image pickup means;

first and second optical filters provided along a light path extending from said object to said image pickup means, said filters arranged to select two different optical wavelength components of light from said object to be measured;

an arithmetic means operatively connected to said image pickup means for determining the temperature on the surface of said object to be measured based on the ratio of the magnitude of said two different wavelength components of light,

an additional image pickup means for obtaining a two-dimensional video image of said object to be measured;

a combining means for combining outputs of said arithmetic means and said additional image pickup means and a monitor means operatively connected to said combining means, said arithmetic means controlling said image pickup means and said combining means such that a composite display comprising a two-dimensional video image of said object to be measured and a graphical representation of the temperature distribution pattern of said object to be measured is produced on said monitor.

4,365,308

METHOD FOR THE TIME CORRECTION OF A DIGITAL SWITCHING SIGNAL

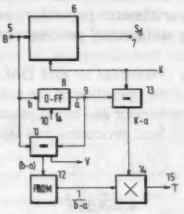
Jürgen Heitmann, Seeheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed July 2, 1981, Ser. No. 279,746

Claims priority, application Fed. Rep. of Germany, July 17, 1980, 3027053

Int. Cl.³ H03K *5/08*; H03N *5/22*; G06G *7/30*

U.S. Cl. 364—577 **3 Claims**



1. A method for the time-correction of a digital switching signal which can occur only at discrete times as a consequence of the scanning process by which the digital signal to be switched is derived and which is therefore delayed relative to its desired time of occurrence, the method comprising deriving a time correction signal whose value is dependent upon the amount by which the digital switching signal is delayed relative to the desired time, and generating a plurality of control signals at the scanning frequency of the digital signal, the control signals collectively constituting the time-corrected switching signal and having values determined by the value of the time correction signal, the control signals being effective to produce a progressive switching of the digital signal over a plurality of scanning periods.

4,365,309

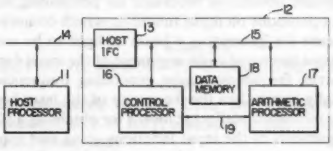
DIGITAL DIFFERENTIAL ANALYZING PROCESSOR

Atomi Noguchi, Hitachi; Jushi Ide, Mito; Hiroshi Kuwahara, and Yoshihiro Miyazaki, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed October 3, 1980, Ser. No. 193,445

Int. Cl.³ G06F *7/64*

U.S. Cl. 364—702 **5 Claims**



1. A digital differential analyzer (DDA) connected through a first direct memory access (DMA) bus to a host processor so as to receive a parameter defining an operation, and to carry out differential analysis as a digital operation, comprising:

(a) a host interface circuit for controlling data transfers with the host processor;

(b) a second DMA bus connected to said host interface circuit;

(c) an arithmetic processor connected to said second DMA bus for receiving parameters and data via said host interface circuit and said second DMA bus from said host processor under the control of a control processor, to carry out a prescribed DDA operation for outputting an end signal to said control processor;

(d) said control processor being connected to said second DMA bus for carrying out control operations concerning said host processor and the DDA operation via said host interface circuit, and for carrying out start control, end control, control of the number of times of DDA operations, control of the operation of an execution sequence, control of the change in an operation parameter and control of the collection of interim results of operations for said arithmetic processor;

(e) control signal lines used for the start and end control of the DDA operation which said control processor performs with the arithmetic processor, said control signal lines connecting said control processor and said arithmetic processor; and

(f) a data memory connected to said DMA bus for storing interim results of the operation of the arithmetic processor by said control processor and being placed in a read/write condition by said host processor and said control processor.

4,365,310

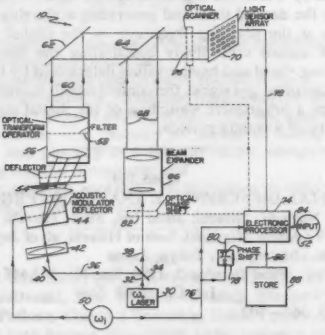
OPTICAL HOMODYNE PROCESSOR

Eugene L. Green, New London, Conn., assignor to The United State of America as represented by the Secretary of the Navy, Washington, D.C.

Filed October 1, 1980, Ser. No. 192,750

Int. Cl.³ G06G 7/195, 9/00

U.S. Cl. 364—822 **10 Claims**



1. An optical homodyne processor for performing complex transform operations on input functions which comprises:

laser means for generating a beam of light to be used as a reference beam and as an argument of the input functions;

a subcarrier frequency source generating frequencies substantially lower than the frequency of the laser beam;

acoustic modulator deflector means for obtaining a plurality of arguments of the input functions using said subcarrier frequency source and said beam of light as the output of the acoustic modulator deflector;

optical transform operator means for operating on the output of said acoustic modulator deflector means so as to accomplish spatial modulation of the output of said acoustic modulator deflector means and to obtain optical readout thereof;

a matrix of a plurality of light sensors for reading the optical readout of said optical transform operator means combined with the reference beam;

electronic processor means for multiplying the input functions with the output of said matrix of a plurality of light sensors and integrating the result to obtain an output thereof;

storage means for storing the output of said electronic processor.

4,365,311

CONTROL OF INSTRUCTION PIPELINE IN DATA PROCESSING SYSTEM

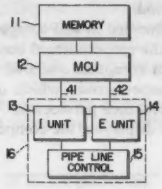
Yasushi Fukunaga, and Tadaaki Bandoh, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed August 31, 1978, Ser. No. 938,346

Claims priority, application Japan, September 7, 1977, 52-106702

Int. Cl.³ G06F 9/28

U.S. Cl. 364—900 **10 Claims**



1. A control of an instruction pipeline in a data processing system in which said instruction pipeline is provided with a plurality of segments and each instruction is executed in a plurality of steps by said segments such that each segment executes one or more of the steps allotted thereto relating to a given one instruction during one operation cycle, while a different segment parallely executes different steps allotted thereto relating to a different one instruction in the same operational cycle,

said control comprising: means provided for use exclusively by each of said segments for suppiying clock signals to control the timing in execution of the respective steps allotted to said each segment,

said supplying means comprising means for adjusting, depending on a time period required for said each segment to complete each of the allotted steps, one-cycle period of the clock signal used for controlling the timing in execution of said each allotted step independently of the timing in parallel execution of the different steps by the different segment and means for controlling one-cycle period of at least one clock signal supplied to at least one of said segments so that said segments complete the respective steps allotted to them substantially at the same time in said one operation cycle.

4,365,312

SEQUENCE CONTROLLER

Nobumasa Nakano; Noboru Takahashi, and Masao Aoki, all of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed August 30, 1979, Ser. No. 71,415

Claims priority, application Japan, August 30, 1978, 53-105934

Int. Cl.³ G06F 15/16, 13/00

U.S. Cl. 364—900 **7 Claims**

1. A sequence controller comprising:

a first memory for storing data representing a series of predetermined sequence control steps;

a first processing unit for reading out the data representing the series of sequence control steps stored in the first memory and for controlling execution of the sequence control steps;

a second memory for temporarily storing data for execution of sequence control steps when execution of said steps is being performed by the first processing unit;

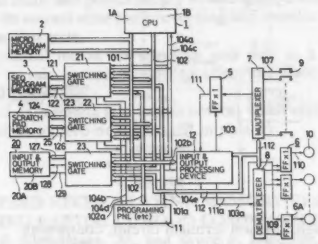
a second processing unit comprising at least one of means for reading and displaying at least portions of the data stored in the first memory, means for converting externally supplied sequence control information data into a predetermined format and writing the data in the format into the

first memory, and means for reading and displaying the temporarily stored data in the second memory;

a third memory having an input memory portion and an output memory portion, the output memory portion storing output information data from the first processing unit produced in response to execution by the first processing unit of the sequence control steps and the input memory portion storing information representing parameters of an externally controlled process;

means for operating the externally controlled process in response to the output information data stored in the third memory;

a third processing unit, said third processing unit comprising means for determining when the first processing unit is not accessing the third memory, means for sequentially reading out the output information data stored in the output memory portion and transferring the output information data to the means for operating the externally controlled process, and means for sequentially writing data representing the parameters of the externally controlled process into the input memory portion, the reading and transferring means and the writing means being operative when and only when the determining means indicates that the first processing unit is not accessing the third memory unit;



first, second and third switching gates coupled to the first, second and third memories, respectively, the first and second switching gates being responsive only to read/write requests suppled randomly from the first and second processing units for transferring data between the first and second memories and the first and second processing units, and said third switching gate being responsive only to read/write requests supplied from the first processing device and the third processing device for transferring data between the third memory and the first and third processing devices, respectively; and

first and second read/write control lines coupled to the first and second processing units, respectively, and to the first, second and third switching gates for selectively coupling the first and second processing units to the first, second and third memories, the first and second read/write lines operating independently of one another.

4,365,313

CUE CONTROL APPARATUS

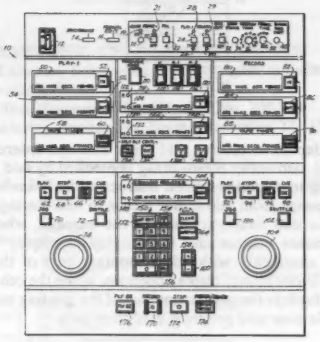
William A. Menezes, Mountain View, and Douglas D. Kuper, Campbell, both of Calif., assignors to Sony Corporation, Tokyo, Japan

Filed April 11, 1980, Ser. No. 139,691

Int. Cl.³ H04N 5/76

U.S. Cl. 364—900 **22 Claims**

1. Cue address generating means for use in signal editing apparatus of the type wherein signals recorded on a first record medium are transferred to a second record medium when preselected positions of said media are reached, said cue address generating means generating a cue address representing the position of one of said record media adapted to be accessed by signal recording/playback means, and comprising a plurality of display registers, at least one display register associated with said first medium and being operative to display position data representing a relative position of said first medium and at least another display register associated with said second medium and being operative to display position data representing a relative position of said second medium; means for supplying position data to be displayed by respective ones of said display registers; a plurality of register selector means associated with respective ones of said display registers and thus associated with respective ones of said media, each register selector means being selectively operative to select its associated display register; at least one cue selector means associated with a respective one of said record media and selectively operative to initiate a cue address generating operation; and control means responsive to the operation of one of said register selector means and to said at least one cue selector means for (a) retrieving the position data displayed in a first display register associated with said first medium when the operated register selector means also is associated with said first medium and retrieving the position data displayed in a second display register associated with said second medium when the operated register selector means also is associated with said second medium, (b) subtracting the retrieved position data from the position data displayed in the display register selected by the operated register selector means to produce a difference signal, and (c) mathematically combining said difference signal with the position data displayed in a third display register to produce said cue address, said third display register being associated with the same record medium as that with which said selectively operated cue selector means is associated.



4,365,314

ELECTRONIC ACCOUNTING MACHINE WITH SPLIT DISPLAY

Guido Badagnani, Fiorano Can., and Costanzo Zino, Borgomanero, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 941,932, Sep. 13, 1978, abandoned. This application August 29, 1980, Ser. No. 182,772

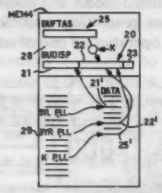
Claims priority, application Italy, September 23, 1977, 69098 A/77

Int. Cl.³ G06F 3/14

U.S. Cl. 364—900 **6 Claims**

1. A program controlled electronic accounting machine comprising a processor for controlling the machine functions by executing corresponding program instructions, a keyboard for manually entering data and messages to be processed by said processor, an alphanumeric line display having a maximum capacity of a line of characters and conditionable by said processor for selectively displaying operator guiding messages generated by said processor according to said program, and reply messages entered by said keyboard, each guiding message including a permanent part indicating the current pro-

gram executed by the machine and a temporary part indicating the data required by the running of the current program, said line display including two different portions, one of which being conditionable to display said permanent part, the other portion being conditionable to display said temporary part of the guiding message, storing means controlled by said processor for normally storing said permanent and said temporary parts, output means conditionable periodically by said processor for connecting said storing means to said display for displaying the information stored in said storing means, and buffer



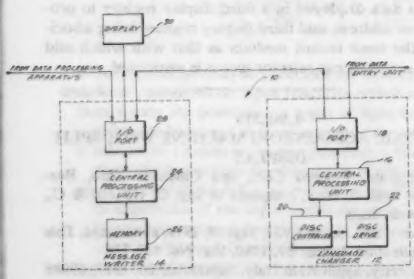
means adapted to receive said reply message entered by said keyboard, said buffer means being controlled by said processor according to a predetermined instruction for transferring said reply message from said buffer means to said storing means as to replace said temporary part of the message, whereby said output means enables said line display to display the reply message alternately with said temporary part of the guiding message in one of said display portions, while the other display portion displays the permanent part of the guiding message for the whole time said program execution lasts.

4,365,315

SYSTEM FOR MULTILINGUAL COMMUNICATION OF COMPUTER-SPECIFIED AURAL OR VISUAL CONTROL MESSAGES IN AN OPERATOR-DESIGNATED LANGUAGE

Donald J. Jamnik, Wauwatosa, Wis., assignor to Kearney & Trecker Corporation, Milwaukee, Wis.

Filed September 8, 1980, Ser. No. 185,240
Int. Cl.³ G06F *15/46, 15/38, 15/16, 3/16*
U.S. Cl. 364—900 **6 Claims**



6. A method for communicating a message from a computer controlled system to an operator in an operator designated language comprising the steps of:

providing a plurality of message address tables each cross referencing a particular message code generated by the computer controlled system in response to a particular computer controlled system condition to the address of a stored message in an operator designated language which is indicative of this condition;

providing a plurality of message storage tables each containing a set of messages each in a particular language and each stored at a unique address;

extracting a selected one of said message address tables whose addresses represent the storage locations of messages in a language designated by an operator;

extracting a message from a particular one of said message storage tables which is located at the address determined from said selected message address table in accordance with the message code from said computer controlled system; and

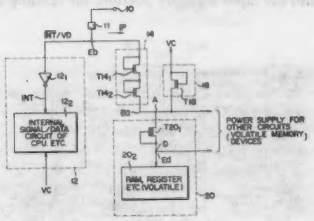
communicating said extracted message to the operator.

4,365,316

MULTIFUNCTION TERMINAL CIRCUIT

Hiroshi Iwahashi, Yokohama, and Masamichi Asano, Musashino, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed 1980, Ser. No. 124,772
Claims priority, application Japan, 1979, 54-23204
Int. Cl.³ G11C *11/40, 7/00*
U.S. Cl. 365—72 **13 Claims**



1. A multifunction terminal circuit, comprising:

a. an optional circuit;

b. a signal terminal connected to said optional circuit as an input terminal for said optional circuit;

c. unidirectional conductor means also connected to said signal terminal for unidirectionally passing both signals and supply power applied to said signal terminal; and

d. circuit means, having a coupling node coupled to said signal terminal through said unidirectional conductor means, for setting the conduction state of said unidirectional conductor means in accordance with a potential difference between said signal terminal and said coupling node;

wherein, when said unidirectional conductor means is rendered conductive, said signal terminal operates as an input terminal to said circuit means for either signals or supply power being applied to said signal terminal, and when said unidirectional conductor means is rendered non-conductive, said signal terminal operates as an input terminal to said optional circuit for signals being applied to said signal terminal.

4,365,317

SUPERCONDUCTIVE LATCH CIRCUIT

Tushar R. Gheewala, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed August 6, 1980, Ser. No. 175,566
Int. Cl.³ G11C *11/44*
U.S. Cl. 365—162 **23 Claims**

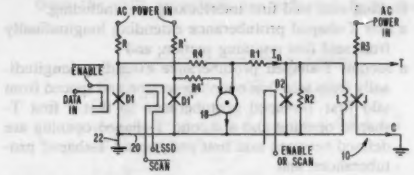
1. A superconductive latch circuit for storing data therein, comprising in combination:

a superconducting storage loop comprising a series connection of a single controllable superconducting switch and an inductance, said switch having at least two states wherein a first state thereof is characterized by a zero voltage across it and a second state thereof is characterized by a non-zero voltage across said switch, said loop being able to support a circulating current therein representative of said data when said switch is in said first state,

first control means for controlling the state of said switch,

supplying means for supplying current from a power source

to said storage loop, said supply means being comprised of a second controllable superconducting switch capable of having at least first and second states and being connected in a series connection with said power source, said second switch being in parallel with said storage loop, and electrical means between said series connection and said storage loop for electrically connecting said power source to said storage loop, said second switch allowing transfer of



current from said power supply to said storage loop when it is in its second state and preventing said transfer when it is in its first state,

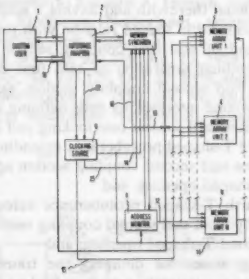
second control means for applying said data as a control signal to said second switch to affect the state of said second switch,

wherein data stored in said loop is not lost when said current diminishes to zero or is changed in polarity.

4,365,318
TWO SPEED RECIRCULATING MEMORY SYSTEM USING PARTIALLY GOOD COMPONENTS

Frederick J. Aichelmann, Jr., and Bruce E. Bachman, both of Hopewell Junction, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed September 15, 1980, Ser. No. 187,254
Int. Cl.³ G11C 7/00, 21/00
U.S. Cl. 365—200 **8 Claims**



1. In a two speed recirculating memory system utilizing rows of partially good components and a row of spare components, one of said spare components being substituted for a respective partially good component when the defective portion thereof is being addressed by an address signal, said signal comprising first bits representing component address and second bits representing portion address,

all portions of said spare components, when addressed, being driven at a fast clock rate, addressed portions of said partially good components being driven at said fast clock rate and unaddressed portions of said partially good components being driven at a slow clock rate,

means for detecting when a defective portion address is being invoked either solely in the current address or solely in the next pending address and for producing an inhibit signal upon that event, said inhibit signal preventing the next memory fetch until resynchronization has been achieved between the last accessed and the unaccessed recirculating memory components,

said means for detecting comprising means for comparing said component address bits of said current and pending addresses and for producing a first signal when said component address bits of said current and pending addresses are the same,

means responsive to said portion bits of said current address and for producing a second signal when said portion bits represent a defective portion,

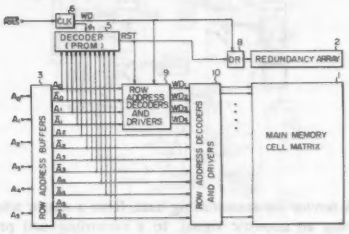
means responsive to said portion bits of said pending address and for producing a third signal when said portion bits represent a defective portion and

means responsive to said first, second and third signals for producing said inhibit signal.

4,365,319
SEMICONDUCTOR MEMORY DEVICE

Yoshihiro Takemae, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed November 12, 1980, Ser. No. 206,272
Claims priority, application Japan, November 13, 1979, 54-157393[U]
Int. Cl.³ G11C 7/00
U.S. Cl. 365—200 **10 Claims**



1. A semiconductor memory device comprising:

a main memory cell matrix having a plurality of sub memory cell matrixes, each sub memory cell matrix having a plurality of memory cell arrays;

a redundancy memory cell array incorporated into said main memory cell matrix;

a first decoder means having a plurality of inputs for receiving a first sub-part of a first address information having n bits and a first clock signal and having a plurality of outputs, for selecting one memory cell array parallel to said redundancy memory cell array and within each said sub memory cell matrix, in accordance with said first sub-part, of said first address information, said outputs of said first decoder means triggered by said first clock signal;

a second decoder means having a plurality of inputs for receiving a second sub-part of said first address information having m bits and said outputs of said first decoder means and having a plurality of output drivers, for selecting one of said sub memory cell matrixes within said main memory cell matrix, in accordance with said second sub-part of said first address information, said output drivers of said second decoder means triggered by said outputs of said first decoder means and select one memory cell array within said memory cell matrix;

a third decoder means having a plurality of inputs for receiving said first address information having n+m bits and an output operatively connected to said redundancy memory cell array and to said first decoder means for selecting said redundancy memory cell array and disabling said second decoder means, in accordance with said first address information,

said output drivers of said second decoder means being

disabled when said third decoder means selects said redundancy memory cell array; and

a fourth decoder means having a plurality of inputs for receiving a second address information, for selecting one memory cell array perpendicular to said redundancy memory cell array within said main memory cell matrix and said redundancy memory array, in accordance with said second address information.

4,365,320

DEVICE FOR DETERMINING THE INSTANT OF RECEPTION OF AN ACOUSTIC WAVE

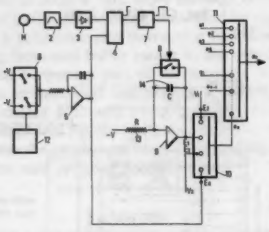
Claude Beauducel, Henouville, and Jacques Cretin, Le Chesnay, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison and Compagnie Generale de Geophysique, Massy, both of, France

Filed September 5, 1980, Ser. No. 184,496

Claims priority, application France, September 5, 1979, 79 22364

Int. Cl.³ G01V *1/28, 1/38*

U.S. Cl. 367—21 **12 Claims**



1. A device for transmitting data, from a sensor adapted for receiving an acoustic signal, to a recording and processing system, said data being representative of the time of receipt of the acoustic signal by the sensor, comprising:

transmission means for intermittently and sequentially transmitting data from said sensor to said recording and processing system;

voltage generating means for generating a voltage linearly varying over time;

selecting means associated with said voltage generating means for detecting at least two discrete values of the voltage generated by said voltage generating means, at successive time instants separated by an interval of time ΔT greater than the intervals of time separating two successive transmissions of data from said sensor to said recording and processing system, said transmission means being adapted for transmitting data corresponding to said discrete voltage values, and to said time interval ΔT, to said recording and processing system; and

said recording and processing system being adapted to calculate the initial instant of time at which the acoustic signal is received by the sensor, by determining from the data transmitted, the slope of a straight graphical line connecting the two discrete voltage values separated by a time interval ΔT, and calculating the initial instant of time from said slope.

4,365,321

SONIC LOGGING TOOL

Robert J. von Bose, Arlington, Tex., assignor to WPC, Inc., Midland, Tex.

Filed July 3, 1980, Ser. No. 165,553

Int. Cl.³ G01V *1/40*

U.S. Cl. 367—25 **4 Claims**

1. A logging tool, comprising:

pressure wave generating means for generating and transmitting pressure waves;

receiver means for receiving a portion of the transmitted pressure waves;

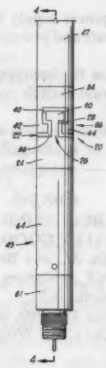
connecting means for mechanically connecting said pressure wave generating means with said receiver means, said connecting means including:

a first coupling section having said pressure wave generating means associated therewith and having a first interlocking end, said first interlocking end including:

a first T-shaped protuberance extending longitudinally from said first coupling section; and

a second T-shaped protuberance extending longitudinally from said first coupling section and spaced from said first T-shaped protuberance so that a first T-shaped opening and a second T-shaped opening are defined between said first and second T-shaped protuberances; and

a second coupling section having said receiver means



associated therewith and having a second interlocking end coupled in spaced relation with the first interlocking end of said first coupling section for preventing longitudinal separation of said first coupling section from said second coupling section, said coupled first and second interlocking ends defining a channel therebetween, said second interlocking end including:

a third T-shaped protuberance extending longitudinally from said second coupling section and into said first T-shaped opening; and

a fourth T-shaped protuberance extending longitudinally from said second coupling section and into said second T-shaped opening; and

damping means for damping the transmitted pressure waves attempting to pass from said pressure wave generating means to said receiver means through said connecting means, said damping means being disposed within the channel defined between the first and second interlocking ends so that said first and second interlocking ends are maintained in said spaced relation.

4,365,322

APPARATUS AND METHOD FOR DETERMINING THE POSITION OF A GAS-SATURATED POROUS ROCK IN THE VICINITY OF A DEEP BOREHOLE IN THE EARTH

Bernard Widrow, 860 Lathrop Dr., Stanford, Calif. 94305

Filed April 18, 1980, Ser. No. 141,270

Int. Cl.³ G01V *1/40, 1/20, 1/28*

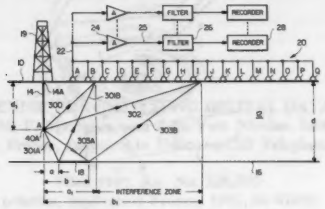
U.S. Cl. 367—32 **5 Claims**

1. Apparatus for determining while drilling in the earth with a drill bit the position of a gas-saturated porous rock in the vicinity of the borehole, said drill bit serving to generate seis-

mic waves of selected characteristics as it drills the borehole in the earth comprising:

(a) a plurality of seismic wave sensors positioned in the earth near the surface thereof, at a plurality of known positions with respect to said borehole;

(b) said seismic wave sensors adapted to receive the seismic waves generated by said drill bit which travel directly to the sensors and in certain positions both seismic waves which travel directly from the drill bit and seismic waves from the drill bit which are reflected from the gas-



saturated porous rock to produce an electrical signal facsimile at each location corresponding to the received seismic waves whereby to generate an interference signal when the sensor receives both direct and reflected seismic waves, said interference signals serving to indicate a gas-saturated porous rock formation, and means including frequency selection means connected to receive the electrical signal facsimile at each location of a selected harmonic at the rate of rotation of said drill bit and provide said interference output signals.

4,365,323

OPTIC READ UNIT FOR SCANNING A RECORD CARRIER HAVING A RADIATION-REFLECTING INFORMATION STRUCTURE

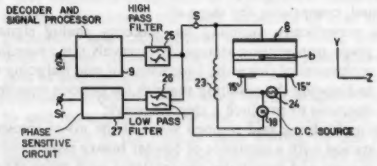
Jacobus P. J. Heemskerk; Kornelis A. Immink, and Carel A. J. Simons, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 924,858, Jul. 17, 1978, which is a continuation of Ser. No. 735,120, Oct. 22, 1976, abandoned. This application March 17, 1980, Ser. No. 130,906

Claims priority, application Netherlands, August 2, 1976, 7608561

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—44 **22 Claims**



1. An optical read unit for reading information from a record carrier having a radiation reflective information structure composed of a plurality of generally parallel tracks in which the information is stored in optically detectable form, said optical read unit comprising a semiconductor diode laser having two opposed, reflective end faces defining a resonant laser cavity therebetween, said diode laser producing a read beam of radiation for scanning said tracks upon relative movement between said read unit and said record carrier, means for focussing said read beam to a spot on the information structure so as to modulate said read beam in dependence on the stored information, said focussing means including a hemisymmetrical objective system having a first and second simple lens with aspherical surface, means for periodically changing the position at which said beam is focussed to said spot relative to the track to be read so as to produce corresponding, periodic modulation of said read beam, said focussing means being arranged to direct the modulated radiation reflected by said information structure back to said diode laser so as to produce changes in a detectable property of said diode laser in dependence on the modulation of said reflected radiation, and means responsive to said property changes for deriving therefrom an information signal representative of the stored information and a further signal representative of deviations of the position at which said spot is focussed from a desired position.

4,365,324

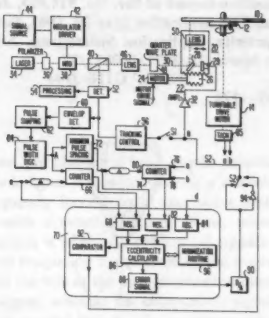
ECCENTRICITY CONTROL DEVICE

Theodore D. Michaelis, Marlton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed November 19, 1980, Ser. No. 208,439

Int. Cl.³ G11B *21/10, 7/00*

U.S. Cl. 369—44 **7 Claims**



1. In an information recording and playback system for use with a record medium having information stored along successive, elongated tracks on a surface thereof, an apparatus comprising:

means for supporting said record medium;

means for detecting variations in a given parameter on said surface of said record medium;

means for establishing relative motion between said supporting means and said detecting means such that said detecting means initially scans said record medium surface in a first predetermined manner;

means for counting variations in said given parameter detected by said detecting means, said variations being representative of said detecting means sensing said successive tracks as said detecting means scans across said successive tracks;

means for generating pulses responsive to the relative motion established between said supporting means and said detecting means;

the number of variations counted by said counting means between first and second pulses generated by said generating means being representative of the eccentricity of said detecting means with respect to said record medium as said detecting means scans the surface of said record medium;

means responsive to said counting means, for generating an error signal; said error signal being applied to said means for establishing relative motion to affect the manner in which said detecting means scans said record medium surface, whereby said error signal affects said means for establishing relative motion such that the eccentricity of said detecting means with respect to said record medium is reduced;

second means for detecting a positional deviation between a first position of said supporting means corresponding to the position of said supporting means when said first pulse is generated by said pulse generating means and a second position of said supporting means corresponding to the position of said supporting means when a first frequency rate of variations is detected by said detecting means;

means for adjusting said error signal generating means to vary the phase of said error signal in response to said second detecting means;

means for inverting the polarity of the error signal being generated by said error signal generating means; and

means for switchably connecting said inverting means in a signal path connecting said means for generating an error signal to said means for establishing relative motion.

4,365,325

STYLUS FOR TRACKING A STEREOPHONIC OR QUADRAPHONIC SOUND GROOVE

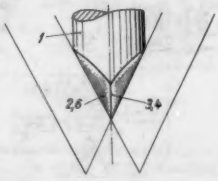
Aalt-Jouk Van Den Hul, Hertog-Govertkade 10, Delft, Netherlands

Division of Ser. No. 41,666, May 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 818,903, Jul. 25, 1977, abandoned. This application May 29, 1981, Ser. No. 268,436

Claims priority, application Switzerland, August 27, 1976, 010938/76; March 23, 1977, 003852/77

Int. Cl.³ G11B *3/44*

U.S. Cl. 369—173 **6 Claims**



1. A method for forming a stylus for tracking the sound groove of a stereophonic or quadraphonic record, comprising the steps of:

(a) providing a stylus having a longitudinal axis and having a mounting part and a taper,

(b) forming a pair of convex curved continuous surfaces in said taper which intersect along a continuous arc disposed in both surfaces, said surfaces being dicontinuous relative to each other along the arc of intersection wherealong they form a sharp edge having a substantially constant angle of intersection and being symmetrical about a plane including said longitudinal axis and said arc, said axis passing through the midpoint on said arc where the arc is tangent to a plane normal to said axis, and

(c) rounding said taper along said sharp edge in a direction normal to said arc with a radius of curvature in the range of 4 to 10 microns wherein, as the stylus tracks the record groove and the actual points that the stylus contacts the groove move around the stylus and define an angle β, this angle β is maintained small.

4,365,326

RECORD PLAYER

Mitsuo Ohsawa, Kanagawa, and Hiroshi Nakazawa, Saitama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed 1981, Ser. No. 224,920

Claims priority, application Japan, 1980, 55-6226

Int. Cl.³ G11B *19/22*

U.S. Cl. 369—268 **6 Claims**

1. A record player, comprising: a turntable on which a record disk is mounted, marker means on said turntable representative of a plurality of angular positions thereof, a rotary drive means for rotating said turntable with a constant speed, a brake means for stopping the rotation of said turntable, a pick-up means for detecting record signals from said record disk, a vertically movable tone arm, a position detecting means coupled with said turntable to detect the rotational position thereof by sensing said marker means, a stop means for initiating a stopping of play of the record disk, start means for initiating a start of play of the record disk, the position detecting means including storage means for storing a market corresponding to a starting angular position of the turntable when the start means is activated, and said brake means being responsive to an output from said stop means and an output from said position detecting means so as to stop said turntable at said starting angular position.

4,365,327

METHOD OF AND MEANS FOR SPREAD-SPECTRUM TRANSMISSION

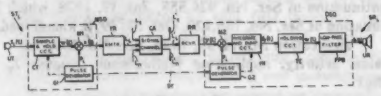
Giancarlo Pirani, Turin, Italy, assignor to Cselt, Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed December 12, 1980, Ser. No. 215,793

Claims priority, application Italy, December 13, 1979, 69390 A/79

Int. Cl.³ H04J *13/00*

U.S. Cl. 370—18 **9 Claims**



1. A method of sending signals from a plurality of transmitting stations to respective receiving stations over a common channel, comprising the steps of:

(a) periodically sampling an outgoing analog signal at a given transmitting station, at intervals not exceeding the reciprocal of twice the bandwidth of said outgoing signal, and storing the resulting samples for periods equaling said intervals to produce a stepped wave;

(b) multiplying said stepped wave at the given transmitting station with a sequence of bipolar binary pulses individual thereto and essentially uncorrelated with pulse sequences employed at other transmitting stations using said common channel, thereby producing a distorted wave;

(c) conveying said distorted wave via said signal link to the associated receiving station;

(d) multiplying the incoming distorted wave at the associated receiving station with a synchronized replica of said individual sequence to re-establish the wave of step (b) possibly encumbered by interfering signals from other users of said common channel;

(e) integrating the re-established stepped wave over intervals equaling the sampling intervals of step (a) to provide discrete signal with amplitudes proportional to those of the steps of the re-established wave;

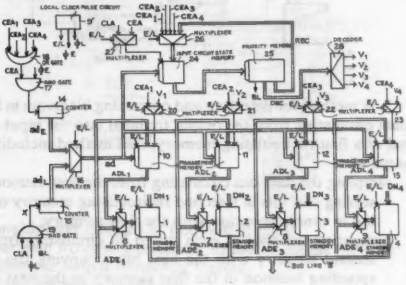
(f) storing said discrete signals for periods equaling said sampling intervals to produce a delayed counterpart of the re-established stepped wave substantially purged of interfering signals and with a low-frequency component conforming to said outgoing analog signal; and
(g) isolating said low-frequency component.

4,365,328

DEVICE FOR SWITCHING DIGITAL DATA

Philippe M. F. Merriaux, and Jean-Yves Nicolas, both of Colombes, France, assignors to Thomson-CSF Telephone, Paris, France

Filed 1981, Ser. No. 228,502
Claims priority, application France, 1980, 80 02088
Int. Cl.³ H04J *3/00*
U.S. Cl. 370—60 **6 Claims**



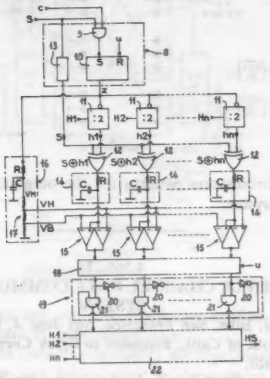
1. A device for switching digital data emitted by "n" input circuits to an output circuit, comprising on the one hand "n" live memories designated as standby memories for storing respectively the digital data emitted by said input circuits at write addresses provided respectively by said input circuits, an output bus line connected to the outputs of said standby memories and to said output circuit, and on the other hand a standby-memory read management circuit which in turn comprises:
"n" live memories designated as management memories for storing respectively the write addresses of said standby memories, said management memories being provided with outputs connected respectively to read address inputs of said standby memories;
a read/write sequential addressing circuit which is common to said management memories, said circuit being write-incremented at the time of each writing by one of said input circuits into one of said standby memories and being read-incremented at the time of each reading of one of said standby memories by said output circuit;
a circuit for establishing reading priority of said standby memories and for read-blocking of said sequential addressing circuit in the event of simultaneous emission by a number of said input circuits;
a circuit for enabling one out of "n" of said management memories, the enabling operation being performed at the time of writing of said management memories by the particular input circuit which is associated with the enabled management memory and at the time of reading of said management memories by said circuit for establishing priority and blocking.

4,365,329

PROCESS AND DEVICE FOR PHASING A LOCAL CLOCK

Maurice Sauvanet, Paris, France, assignor to Thomson-CSF, Paris, France

Filed July 25, 1980, Ser. No. 172,192
Claims priority, application France, July 27, 1979, 79 19425
Int. Cl.³ H04J *3/06*; H04L *7/04*
U.S. Cl. 370—100 **15 Claims**



1. A process for phasing a local clock, in which the most favorable clock signal is selected among n available signals of the same frequency having equal successive phase shifts, by comparison with a synchronization burst, wherein a logic phase comparison is effected between (a) signals obtained by the division of frequency by 'of each of the n available clock phases and (b) the bits of the synchronization burst to obtain a comparison signal, wherein the comparison signal obtained is averaged over several bits of this synchronization burst, and wherein one of the n signals is selected which has a phase shift close to π, the improvement comprising selecting the most favorable clock phase as being the one represented by a voltage level which is located within an interval or "window" centered substantially on a value equal to half of the maximum probable value VM of the voltage forming the comparison signal, which maximum value would be obtained for the maximum phase shift 2π.

4,365,330

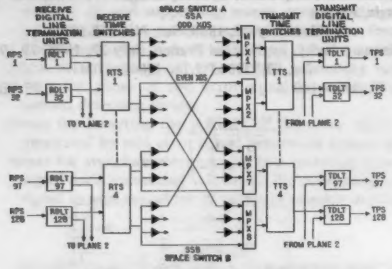
CHANNEL ZERO SWITCHING ARRANGEMENTS FOR DIGITAL TELECOMMUNICATION EXCHANGES

Geoffrey Chopping, Poole; Robert V. Moberly, Broadstone, and Alexander S. Philip, Wimborne, all of England, assignors to The Plessey Company plc, Ilford, England

Filed August 6, 1980, Ser. No. 175,718
Claims priority, application United Kingdom, August 10, 1979, 7927860
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—100 **5 Claims**

1. A method of switching the incoming channel used to carry synchronisation patterns of a multi-channel time division multiplex pulse code modulated line transmission system to any one of the outgoing channels of a multi-channel time division multiplex pulse code modulated line transmission system in a telecommunications exchange using a digital switching network comprising the steps of
(a) amending the pattern in a predetermined manner in the said incoming channel received at the exchange,
(b) switching the said incoming channel carrying the amended pattern across the exchange switching network to a selected outgoing channel and

(c) transmitting the amended pattern in the selected outgoing channel if that channel is not a channel used to carry



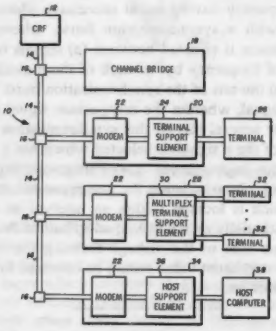
synchronisation patterns for the outgoing line transmission system.

4,365,331

MULTIPLE CHANNEL DATA COMMUNICATION SYSTEM

Kenneth J. Biba, San Francisco, and Jose J. Picazo, Jr., San Jose, both of Calif., assignors to Sytek Corporation, Sunnyvale, Calif.

Filed July 7, 1980, Ser. No. 166,384
Int. Cl.[3] H04J *1/10*
U.S. Cl. 370—124 **13 Claims**



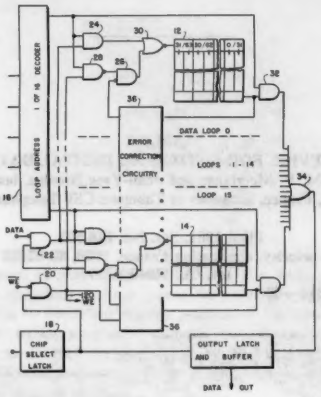
1. A data communication system comprising:
a coaxial cable;
a plurality of MODEM's connected to the cable including means for selecting the transmit and receive frequency bandwidths of each of the MODEM's;
means connected to the MODEM's for supplying data to and receiving data from each of the MODEM's;
a central retransmission facility connected at the head end of the cable whereby a signal transmitted by at least one of the MODEM's is received by the central retransmission facility and translated to the receive frequency bandwidth of the MODEM which transmitted said signal; and
a channel bridge connected to the cable including two or more MODEM's each of said MODEM's having different transmit frequency bandwidths and different receive frequency bandwidths and including means for transferring a signal received by one of said MODEM's to another of said MODEM's whereby the MODEM's connected to the cable which are transmitting and receiving in different frequency bandwidths may receive signals from and transmit signals to each other.

4,365,332

METHOD AND CIRCUITRY FOR CORRECTING ERRORS IN RECIRCULATING MEMORIES

Rex Rice, Menlo Park, Calif., assignor to Fairchild Camera and Instrument Corp., Mountain View, Calif.

Filed November 3, 1980, Ser. No. 203,774
Int. Cl.[3] G06F *11/10;* **G11C** *29/00*
U.S. Cl. 371—13 **16 Claims**



1. A method for detecting and correcting bit errors in binary data circulating from the output terminal into the input terminal of a first recirculating memory, said method including the steps of:
sampling the data bits circulating from the first memory and storing said bits in a second recirculating memory operating in synchronization with the first memory;
comparing the state of each stored bit circulating from the second memory with the next bit occupying the corresponding location in the first memory as the next corresponding bit circulates from said first memory;
generating an error detection signal whenever the state of said stored bit differs from that of the next corresponding bit;
reversing the state of the next corresponding bit in response to said error detection signal; and
inserting said reversed state next corresponding bit into the data circulating from the first memory at the next recirculating bit location of the next corresponding bit.

4,365,333

TEST SIGNAL GENERATOR

Steven J. Mulvey, East Greenbush, N.Y., assignor to National Railroad Passenger Corporation, Washington, D.C.

Filed September 22, 1980, Ser. No. 189,395
Int. Cl.[3] B60T *8/12*
U.S. Cl. 371—27 **6 Claims**

1. A test signal generator for generating signals simulating the signals obtained from the axles of a railroad car, to permit testing of a railroad car brake controller, said generator comprising:
(a) a voltage controlled oscillator;
(b) a voltage ramp generator for sequentially applying to said voltage controlled oscillator an input voltage changing at a first rate and then an input voltage changing at a second rate to cause the frequency of the output signal from said voltage controlled oscillator sequentially to decrease at a first rate simulating the signals obtained from an axle of a railroad car during normal braking and then to decrease at a second rate simulating the signals obtained from an axle of a railroad car during abnormal braking either with slipping or just prior to slipping;

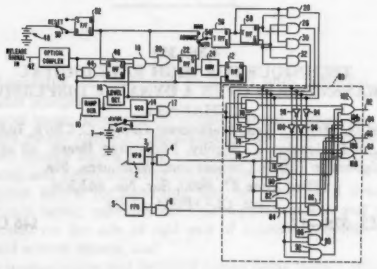
(c) a voltage level detector for detecting the voltage level of the voltage ramp generator output applied as an input voltage to said voltage controlled oscillator;

(d) input means for receiving from a railroad car brake controller a control signal indicative of sensing by the controller of a railroad car axle signal indicating normal braking of the railroad car;

(e) manual initiating means for initiating operation of said voltage ramp generator;

(f) first control means coupled to said input means and to said voltage level detector and, after said voltage level detector has detected a voltage ramp generator output voltage level at which said voltage ramp generator changes from applying to said voltage controlled oscillator an input voltage changing at the first rate to applying to said voltage controlled oscillator an input voltage changing at the second rate, responsive to receipt of a control signal by said input means for initiating operation of said voltage ramp generator;

(g) a plurality of output lines, each adapted for connection to an input circuit of a railroad car brake controller;



(h) a multiplexer coupled to said output lines;

(i) a variable frequency oscillator including means for controlling the output frequency thereof;

(j) a fixed frequency oscillator;

(k) second control means coupled to said variable frequency oscillator, said fixed frequency oscillator, said voltage controlled oscillator, and said multiplexer, and capable of alternatively assuming a first position in which the outputs of said variable frequency oscillator and said fixed frequency oscillator are applied to said multiplexer for application of said variable frequency oscillator output to a first one of said plurality of output lines and application of said fixed frequency oscillator output to the other ones of said plurality of output lines, and a second position in which the output of said voltage controlled oscillator is applied to said multiplexer for application to said first one of said plurality of output lines; and

(l) means for sequencing said multiplexer to select different ones of said output lines as said first one of said plurality of output lines.

4,365,334

ELECTRICAL TESTING APPARATUS AND METHODS

Anthony J. Smith, Penn, and Timothy J. Sheppard, Pinner, both of England, assignors to Racal Automation Limited, Bracknell, England

Filed 1981, Ser. No. 232,665

Claims priority, application United Kingdom, 1980, 8006607

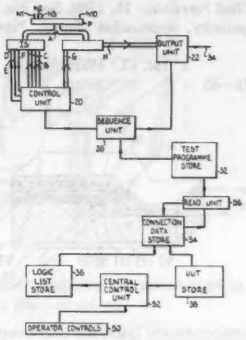
Int. Cl.³ G01R *31/28*

U.S. Cl. 371—27 **10 Claims**

1. A system for generating test data for testing any one of a plurality of logic circuits, comprising

a store storing for each of the basic logic circuit types data in the form of a respective list of logic states each logic state identifying one or more particular terminals of the logic circuit to which specified data inputs are to be applied and one or more particular terminals at which specified data outputs are to be produced if the logic circuit is operating correctly,

means generating connection information relating to a particular logic circuit (of one of the basic types) to be tested



and specifying any external conditions applied to that circuit by means of its terminals, and

modifying means operative to modify the logic states in the stored list for that logic circuit in dependence on the connection information whereby to produce the said test data.

4,365,335

GAS DISCHARGE LASER DEVICE

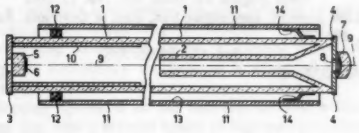
Theodorus F. Lamboo, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 834,244, Sep. 19, 1977, abandoned. This application September 4, 1980, Ser. No. 183,866

Claims priority, application Netherlands, July 28, 1977, 7708349

Int. Cl.³ H01S *3/04, 3/03*

U.S. Cl. 372—34 **11 Claims**



1. A gas discharge laser device comprising a tubular glass envelope, a laser tube coaxial with the tubular envelope, a pair of spaced apart laser mirrors sealing opposite ends of the tubular envelope and disposed to form an optical resonator having an optical axis which coincides with the axis of the laser tube, a metal sheath at least partly surrounding and coaxial with the tubular envelope, and means including a slack resilient element having a low coefficient of elasticity for supporting the metal sheath around the tubular glass envelope in good heat transfer relationship therewith so as to provide a substantially uniform heat transfer from the glass envelope to the metal sheath sufficient to substantially prevent the occurrence of varying temperature gradients along substantially the entire length of the laser tube such that a thermally induced deformation of the metal sheath exerts a negligible mechanical influence on the laser tube.

4,365,336

TERRACED SUBSTRATE SEMICONDUCTOR LASER

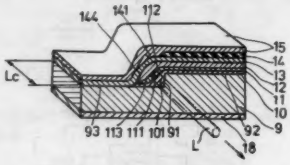
Takashi Sugino, Takatsuki; Hirokazu Shimizu, Toyonaka; Masaru Wada, Takatsuki, and Kunio Itoh, Uji, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed November 18, 1980, Ser. No. 208,021

Claims priority, application Japan, November 19, 1979, 54-150409

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—45 5 Claims



1. In a semiconductor laser, the improvement comprising:

a terrace-shaped semiconductor substrate having an upper face, a lower face and a step part disposed between said upper face and said lower face,

a clad layer formed on said terrace-shaped semiconductor substrate and including at least an upper part formed on said upper face and a corner part having a triangular section and formed at a corner defined by said lower face and said step part, said corner part being thicker than said upper part,

an active layer formed on said first clad layer and including a horizontal upper part formed on said upper part of said first clad layer and an oblique lasing region formed obliquely on said corner part of said first clad layer,

a current injection electrode having a stripe shaped injection face disposed above said lasing region,

wherein said active layer is terminated substantially at a lower end of said oblique lasing region.

4,365,337

EXCITATION SYSTEM FOR A FAST PULSED DISCHARGE

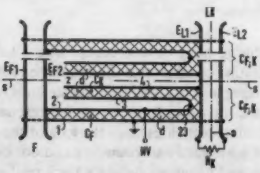
Hans-Jürgen Cirkel, and Willi Bette, both of Erlangen, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed August 12, 1980, Ser. No. 177,442

Claims priority, application Fed. Rep. of Germany, August 13, 1979, 2932781

Int. Cl.³ H01S *3/09*

U.S. Cl. 372—87 22 Claims



1. An excitation system for fast pulsed discharge with excitation by a highly homogeneous arc-free capacitor-discharge in a gas space between and defined by two mutually opposed electrodes disposed within a discharge chamber in a laser, the two electrodes extending in mutual alignment, parallel to the optical axis of the laser and having edges spaced from one another, and with first and second stripline capacitors for low-induction energy-storage, the stripline capacitors having electrodes connected within a pulse-forming network to the laser electrodes and to electrodes of a fast high-voltage switching gap, respectively, high-voltage pulses for the laser electrodes being producible through ignition of the high-voltage switching gap by means of discharge of the stripline capacitors, dielectric layers disposed between the capacitor electrodes, the dielectric layers and the capacitor electrodes extending normally to the optical axis of the laser and being stacked parallel to the optical axis of the laser in a capacitor stack, and laterally extending connecting lugs connecting the capacitor electrodes within the pulse-forming network to the electrodes of the laser chamber, comprising, in the direction in which the dielectric layers and the capacitor electrodes are stacked, mutually adjacent, miniature common capacitance units of the individual stripline capacitors disposed, respectively, with the capacitor electrodes and dielectric layers thereof mirror-inverted relative to an imaginary symmetry plane extending normally to the laser axis between said capacitance units so that the mutually opposing capacitor electrodes of the respectively mutually adjacent capacitance units are at the same potential and are combinable into common capacitor electrodes.

4,365,338

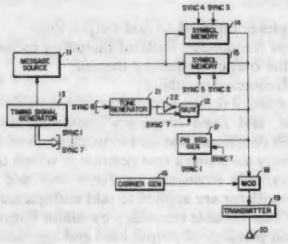
TECHNIQUE FOR HIGH RATE DIGITAL TRANSMISSION OVER A DYNAMIC DISPERSIVE CHANNEL

Daniel D. McRae, West Melbourne; George C. Clark, Indialantic, and Nicholas C. Szuchy, Melbourne Beach, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed June 27, 1980, Ser. No. 163,516

Int. Cl.³ H03H *17/00*

U.S. Cl. 375—12 146 Claims



1. A communication system for communicating information signals from a transmitting station to a receiving station over a dispersive medium, comprising:

transmitting apparatus, disposed at said transmitting station, for transmitting information signals interleaved with known signals; and

receiving apparatus, disposed at said receiving station, for receiving the transmitted signals subject to the influence of said dispersive medium and providing estimates of the originally transmitted information signals, said receiving apparatus comprising:

means for generating a replica of said known signals,

time domain processing means for simulating the time domain effect of said dispersive medium on signals transmitted through it by deducing prescribed characteristics of said medium, and for producing estimates of said information signals in accordance with a preselected relationship between said prescribed characteristics of said simulated effect and said known and received signals, and

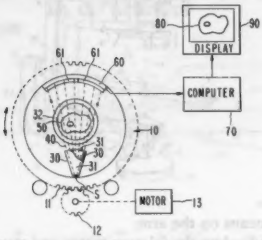
output conversion means, coupled to said processing means, for converting said estimates of said information signals into output signals representative of the original information signals at said transmitting station.

4,365,339

TOMOGRAPHIC APPARATUS AND METHOD FOR RECONSTRUCTING PLANAR SLICES FROM NON-ABSORBED AND NON-SCATTERED RADIATION

John M. Pavkovich, Palo Alto, and Craig S. Nunan, Los Altos Hills, both of Calif., assignors to General Electric Company, Milwaukee, Wis.

Division of Ser. No. 643,894, Dec. 23, 1975, Pat. No. 4,149,247.
This application September 11, 1978, Ser. No. 941,506
Int. Cl.³ A61B 6/00
U.S. Cl. 378—015 **1 Claim**



1. Apparatus for examining an object with radiation, said apparatus comprising:

support means mounted for rotation about a fixed axis;

source means forming a fan shaped planar beam of radiation, said source means being mounted on said support means with said beam directed toward said axis;

detector means for detecting said fan beam, said detector means being mounted on said support means and positioned on the side of said axis of rotation opposite from said source means; and

said source means and detector means being rigidly attached to said support means during operation; whereby

in operation of said apparatus said support means, source means and detector means are all constrained against motion in any direction except rotation about said fixed axis;

means for continuously rotating said support means;

means for turning said beam on and off periodically during said continuous rotation;

means for performing a non-reordering convolution operation on signals derived from the fan beam received by said detector means at positions of the fan beam, thus arranging said signal in convolved form representative of radiation absorbed by said object at each of said positions; and

display means responsive to said means for performing a non-reordering convolution operation for providing a visual portrayal of radiation absorbed by said object.

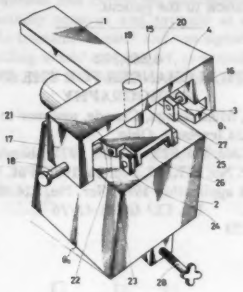
4,365,340

DENTAL RADIOGRAPHIC APPARATUS FOR PHOTOGRAPHING ENTIRE JAWS AND TAKING CEPHALOGRAM

Kazuo Nishikawa, Yawata, and Kazuo Hozumi, Ohtsu, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed June 16, 1981, Ser. No. 274,228
Claims priority, application Japan, June 20, 1980, 55/087466
Int. Cl.³ A61B 6/14
U.S. Cl. 378—039 **4 Claims**

1. A radiographic apparatus having an X-ray generator horizontally and vertically rotatably mounted at one end of a rotary arm and designed to set the generator in any direction of irradiation either for cephalographic use or for use in photographing the entire jaws, said apparatus being characterized in that said generator is provided with a sliding element and a guide groove for said sliding element in said rotary arm, said groove being inclined to guide said sliding element to make automatic vertical rotation of said X-ray generator through a specified angle for changing the direction of the generator from one state of the generator set either for cephalographic



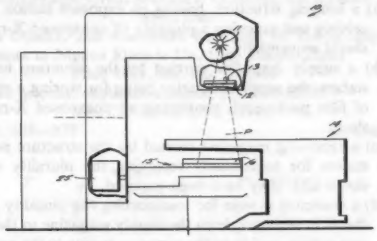
use or for use in photographing the entire jaws to the other state thereof set for photographing.

4,365,341

ON-LINE TREATMENT MONITORING FOR RADIATION TELETHERAPY

Wing-Chee Lam, Columbia, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed June 9, 1980, Ser. No. 157,843
Int. Cl.³ A61N 5/00
U.S. Cl. 378—65 **25 Claims**



1. A method of treating a patient with radiation therapy utilizing a radiation teletherapy machine capable of emitting high-energy x-rays, comprising the steps of:

(a) positioning the patient in the irradiation portal of the radiation teletherapy machine in a supposed effective treatment position;

(b) effecting operation of the machine to emit a therapy beam, and only a therapy beam, of high-energy pulses for effective patient treatment;

(c) automatically detecting only the high-energy pulses and transforming the radiation detected during the pulses to electrical signals, by providing at least one linear array of solid-state detectors in a position on the opposite side of the patient as the fixed beam radiation teletherapy machine, and stepping the at least one linear array over at least a portion of the irradiation portal in sync with the pulses from the radiation teletherapy machine;

(d) immediately converting the electrical signals to a readable display providing the landmarks of the irradiation portal;

(e) comparing the patient's position as defined by the landmarks to a predetermined desired position for effective treatment;

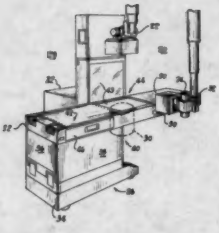
(f) immediately halting irradiation if the portal is outside the acceptable margin;

(g) adjusting the patient's position with respect to the irradiation portal so that it is proper for effective treatment; and
(h) continuing radiation therapy to deliver the desired dosage of radiation to the patient.

4,365,342
X-RAY FILM CHANGER FOR THE SERIAL RADIOGRAPHY

Tamas A. Vepy, Mississauga, Canada, assignor to Picker International, Inc., Cleveland, Ohio

Division of Ser. No. 818,823, Jul. 25, 1977, abandoned, which is a division of Ser. No. 617,102, Sep. 26, 1975, Pat. No. 4,082,956. This application 1980, Ser. No. 114,697
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—173 **6 Claims**



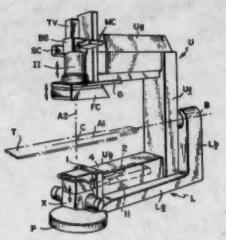
1. A film changer in a radiographic system for taking a series of radiographs of a specimen comprising:
(a) a housing structure, having an exposure station for receiving and exposing a plurality of unexposed X-ray film sheets sequentially,
(b) a supply magazine carried by the structure near the station, the supply magazine being for storing a plurality of film packs each containing an unexposed X-ray film sheet,
(c) a receiving magazine carried by the structure near the station for sequentially receiving the plurality of film sheets after they have been exposed,
(d) a transport system for transporting the plurality of film sheets in sequence from the supply magazine to the exposure station, and from the exposure station to the receiving magazine, and
(e) drive means for providing to said transport system harmonic drive motion having a preselectable dwell time between drive motions, said drive means including:
(i) a transmission, having an input shaft and an output shaft, for providing a harmonic output motion on said output shaft in response to rotation of said input shaft,
(ii) a prime mover for rotating said input shaft
and,
(iii) mechanism for selectively controlling the dwell time between harmonic output motions of the output shaft.

4,365,343
COUNTERWEIGHTED X-RAY TUBE

John K. Grady, Lincoln; David B. Rice, Cambridge, and Paul G. Rice, Lincoln, all of Mass., assignors to XRE Corporation, Concord, Mass.

Filed November 4, 1980, Ser. No. 203,963
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—181 **8 Claims**

1. Radiological apparatus comprising:
a support; and
radiation source means and radiation receptor means at spaced positions on the support for examination of a subject at a location therebetween, the source and receptor means having a common radiation axis extending through the subject location, and each means being mounted on the support to move along the radiation axis;
wherein the support includes
an arm extending to one radiation means toward the radiation axis;
means on the arm guiding the radiation means along the radiation axis;

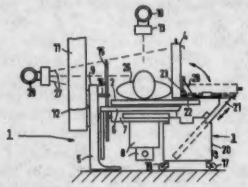


fulcrum means on the arm;
a lever pivoted on the fulcrum means and pivotally attached at one end to the radiation means; and
a counterweight guided on the arm and engaging the other end of the lever to counterbalance the radiation means.

4,365,344
STAND FOR AN X-RAY IMAGE DETECTION APPARATUS WHICH IS INSERTABLE BENEATH THE PATIENT SUPPORT OF AN X-RAY EXAMINATION APPARATUS

Hans-Peter Dornheim, Bubenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed 1981, Ser. No. 225,311
Claims priority, application Fed. Rep. of Germany, 1980, 3003976
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—189 **14 Claims**



1. A stand for an x-ray image detection apparatus which is insertable beneath a patient support platform of an x-ray examination apparatus, said stand comprising: a stand carriage (20) which can be transported on the floor in a two-dimensional fashion, a lifting carriage (21) which is height-adjustable on the stand carriage, said lifting carriage comprising a support-mounting (23) which is pivotal through 90° about a horizontal axis on the lifting carriage, and image detection apparatus (4) fastened to said support-mounting (23) so as to be tiltable from a position with a horizontal image plane into a position with a vertical image plane, wherein the improvement comprises: said lifting carriage (21) having an essentially angled configuration including a horizontal leg (34) having a free end carrying said support mounting (23) so that the image detection apparatus (4) is pivotally mounted at the free end of the horizontal leg (34); the stand carriage (20), the lifting carriage (21) and the support-mounting (23) being arranged so as to be beneath the image detection apparatus (4); and coupling means (48, 49, 50) connected with the stand carriage (20) and capable of being

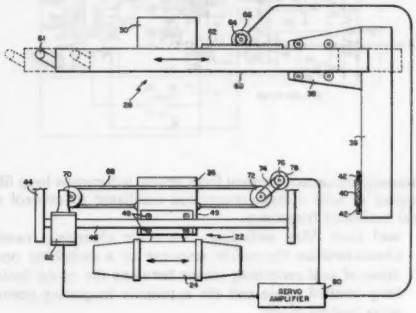
brought into engagement with an x-ray examination apparatus for the defined positioning of the image detection apparatus (4) relative to an x-ray examination apparatus (1).

4,365,345

SERVO OPERATED FLUOROSCOPIC TABLE

James R. Craig, Glenview, and Steven F. Nerge, Elgin, both of Ill., assignors to The Machlett Laboratories, Incorporated, Stamford, Conn.

Continuation of Ser. No. 962,726, Nov. 21, 1978. This application October 30, 1980, Ser. No. 202,095
Int. Cl.³ A61B *6/08*
U.S. Cl. 378—190 **3 Claims**



1. A fluoroscopic apparatus comprising:
a fluoroscopic table having a base and a patient-supporting surface
a radiation source means within the base and disposed for directing through said surface a beam of radiation having a central axis substantially normal to said surface;
a fluoroscopic receptor means spaced from the base and disposed for receiving said beam when aligned with the source means and producing corresponding fluoroscopic images, said receptor means being movable translationally along said patient supporting surface;
source support means for supporting the source means independent of the receptor means and translationally movable with respect to said patient-supporting surface while maintaining said beam substantially normal to said surface;
and servo means connected to the source means and the receptor means for automatically maintaining the source means translationally in registrational alignment with the receptor means while maintaining said axis of said beam substantially normal to said surface to produce a sequence of fluoroscopic images.

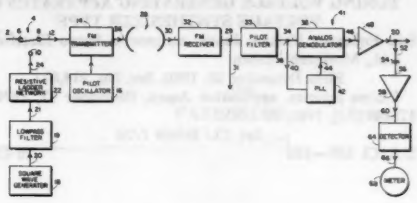
4,365,346

BUILT-IN LINEARITY TESTING ARRANGEMENT FOR AN FM RADIO SYSTEM

Abram Froese, North Vancouver; Larry Y. Onotera, Surrey, and Alvin Liebelt, Vancouver, all of Canada, assignors to AEL Microtel, Ltd., Burnaby, Canada

Filed March 2, 1981, Ser. No. 239,770
Int. Cl.³ H04B *1/00, 17/00*
U.S. Cl. 455—42 **5 Claims**

1. In a radio system, including a transmitter and a receiver, which employs frequency modulation, apparatus or providing a built-in system linearity test arrangement comprising:
a transmitter having a baseband input terminal or accepting information and test square wave signals to be conditioned for radio transmission to said receiver;
a pilot frequency oscillator having an output terminal connected to another input terminal of said transmitter;
means for selectively applying said test signal to said baseband input terminal, said test signal being adjusted to provide a predetermined deviation of said frequency modulation transmitter;
an FM receiver adapted to receive the signals conditioned for transmission, and to process said received signals so as to substantially recover and provide at an output port thereof the transmitted pilot and test signals, said receiver also providing at said output port, as a result of interaction between the pilot and square-wave test signals because of



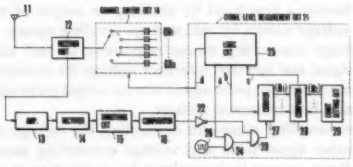
system non-linearity, an AC signal which may be superimposed thereon;
means connected to the output port of said receiver for detecting said superimposed AC signal and providing a signal representative of the amplitude thereof at an output terminal; and
means for measuring the amplitude of said representative signal.

4,365,347

CHANNEL SELECTING SYSTEM FOR USE IN A MULTI-CHANNEL MOBILE COMMUNICATION SYSTEM

Shigeru Otsuka, and Tomokazu Kai, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed 1981, Ser. No. 228,544
Claims priority, application Japan, 1980, 55-10752
Int. Cl.³ H04B *1/16, 15/00*
U.S. Cl. 455—179 **5 Claims**



1. A channel selecting system for use in a multi-channel mobile communication system comprising receiver means for receiving radio wave signals on a plurality of channels, and field strength measuring means for sequentially measuring the received field strength associated with each channel, said field strength measuring means comprising:
means for totaling time segments in which the field strength is lower than a predetermined level determined by the selecting system, within a measurement time span for each channel, said totaling means including pulse train generator means for generating pulses which are counted by the totaling means during said time segments in which the field strength is lower than said predetermined level;
means for setting a reference time length which is less than the measurement time span;
comparing means for comparing the length of time of the totaled time segments with said reference time length and generating a signal when said totaled time length is greater than or equal to said reference time length;
switching means coupled to said comparing means for switching said communication system from one of said plurality of channels to another one of said plurality of channels upon

the occurrence of at least one of said signal generated by said comparing means, and the elapsing of said measurement time span;

whereby the selecting system selects the channel with the highest relative field strength as measured by the selecting system.

4,365,348

TUNING VOLTAGE GENERATING APPARATUS OF VOLTAGE SYNTHESIZER TYPE

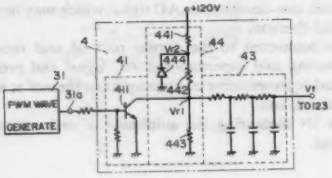
Isao Fujimoto, Katano, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed December 10, 1980, Ser. No. 214,872

Claims priority, application Japan, December 17, 1979, 54-1751491[U]; 1980, 55-14950

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—180 **10 Claims**



6. A tuning voltage generating apparatus of a voltage synthesizer type for supplying a tuning voltage to a tuner employing a variable reactance element as a tuning element, comprising:

input pulse signal providing means for providing an input pulse signal having information encoded therein corresponding to a frequency to be received,

first reference voltage generating means including a voltage dividing means for generating a first reference voltage having a first level by dividing an output of a constant voltage source by said voltage dividing means,

voltage converting means responsive to said input pulse signal and said first reference voltage for voltage converting said input pulse signal into an output pulse signal using said first reference voltage,

low-pass filter means for converting the voltage converted pulse signal from said voltage converting means into a direct current tuning voltage for application to said tuner,

an upper limit of said tuning voltage being determined by said voltage dividing means, and

lower limit determing means comprising a reference voltage generating circuit for determining a lower limit of the tuning voltage from said low-pass filter means.

4,365,349

RADIO RECEIVER HAVING PHASE LOCKED LOOP AND AUTOMATIC FREQUENCY CONTROL LOOP FOR STABLY MAINTAINING LOCAL OSCILLATOR FREQUENCY OF VOLTAGE-CONTROLLED LOCAL OSCILLATOR

Minoru Ogita, and Shigenobu Kimura, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

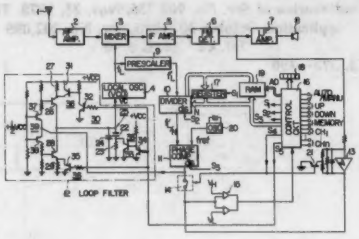
Filed 1981, Ser. No. 227,535

Claims priority, application Japan, 1980, 55-11272[U]; 1980, 55-11273[U]; July 24, 1980, 55-101793

Int. Cl.³ H04B *1/10, 1/16*

U.S. Cl. 455—192 **5 Claims**

1. In a radio receiver comprising a voltage-controlled oscillator which serves as a local oscillation to produce a local oscillator signal having a local oscillator frequency, said voltage-controlled oscillator being controlled by a phase locked loop in a first control mode when a broadcast signal is selected by said receiver and being controlled by an automatic frequency control loop in a second control mode to maintain the tuning of said receiver in said broadcast signal after said phase locked loop control, and means for switching over said first and second control modes, said phase locked loop and said



automatic frequency control loop having a common loop filter coupled to said voltage-controlled oscillator to control the local oscillator frequency,

said loop filter including means for changing transfer characteristics thereof in response to a switching operation of said switching means between the phase locked loop control mode and the automatic frequency control loop control mode.

4,365,350

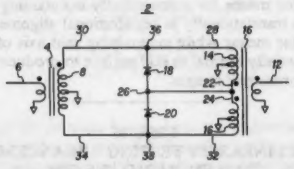
LOW FREQUENCY CONVERTER WITH DIODE PAIR MIXER

Ben R. Hallford, Wylie, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed March 13, 1981, Ser. No. 243,326

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—330 **4 Claims**



1. A frequency converter comprising, in combination:

a first transformer having a primary winding and a secondary winding;

a dual transformer having a primary winding and a pair of secondary windings; and

a diode mixer bridge having a pair of diodes interconnecting said secondary windings and connected in series across said secondary winding of said first transformer for heterodyne modulation product signal generation, wherein one end of the first secondary winding of said dual transformer and one end of the second secondary winding of said dual transformer are connected in common to a point between said diodes.

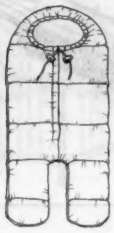
DESIGN PATENTS

GRANTED DEC. 21, 1982

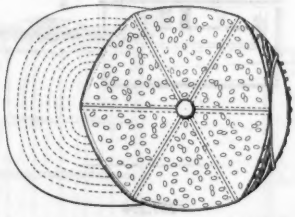
ERRATA

For CLASS	See PATENT NO.
D07–309	267,325

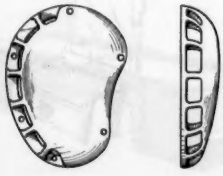
267,284
BABY GARMENT
Elizabeth Andrews, 2 Bisbee St., Camden, Me. 04843
Filed December 3, 1979, Ser. No. 99,335
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—33



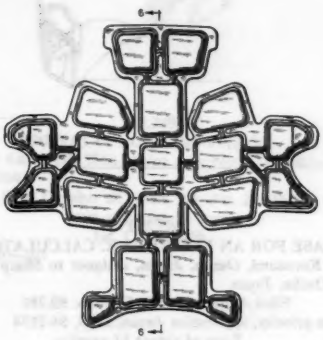
267,285
CAP
Charles J. Lipschutz, Louisville, Ky., assignor to Louisville Manufacturing Co., Inc., Louisville, Ky.
Continuation-in-part of Ser. No. 946,955, Sep. 29, 1978, abandoned. This application 1980, Ser. No. 113,134
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—248



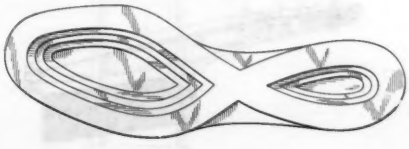
267,286
EAR PROTECTOR
Wolf Anderie, Strasbourg, France, assignor to ADIDAS Fabrique de Chaussures de Sport, Landersheim, France
Filed April 14, 1980, Ser. No. 139,679
Claims priority, application France, October 22, 1979, 79 364
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—259



267,287
PNEUMATIC LINER FOR PROTECTIVE HEADGEAR
Elwyn R. Gooding, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.
Filed September 11, 1980, Ser. No. 186,717
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—260



267,288
SHOE SOLE
Howard F. Davis, 45 W. 132nd St., New York, N.Y. 10037
Filed December 9, 1980, Ser. No. 214,487
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



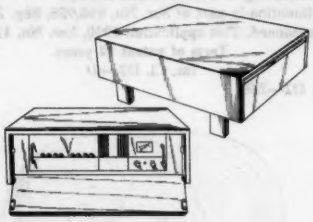
267,289
NECKTIE KNOT SUPPORT
John Najarian, 27 Dorotockeys La., Old Tappen, N.J. 07675
Filed October 24, 1980, Ser. No. 200,593
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—401

267,290
CASE FOR AN ELECTRONIC CALCULATOR
Shigeru Kurozumi, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed August 3, 1979, Ser. No. 59,781
Claims priority, application Japan, 1979, 54-2174
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—30.1

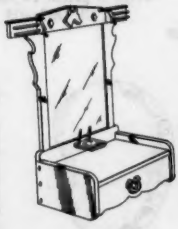
267,291
WINDSHIELD CLEANING BRUSH
Evan L. Hopkins, 428 Peyton, Emporia, Kans. 66801, and Donald W. Cartner, 8809 E. 59th St., Kansas City, Mo. 64133
Continuation-in-part of Ser. No. 949,108, Oct. 6, 1978. This application April 7, 1980, Ser. No. 137,769
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—12

267,292
HAIR BRUSH
Salvatore J. Megna, 3721 Fair Oaks Blvd., Sacramento, Calif. 95825
Filed November 23, 1979, Ser. No. 96,667
Term of patent 14 years
Int. Cl. D04—*02*
U.S. Cl. D4—35

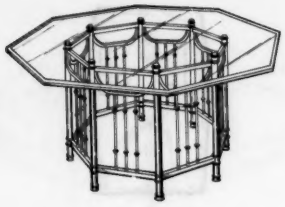
267,293
COMBINED TABLE, RADIO RECEIVER AND SPEAKER
Marcel Georgi, 517 Saraguay, Pierr Feonts, P.Q., Canada
Filed August 10, 1978, Ser. No. 932,755
Term of patent 7 years
Int. Cl. D06—*03*
U.S. Cl. D6—4



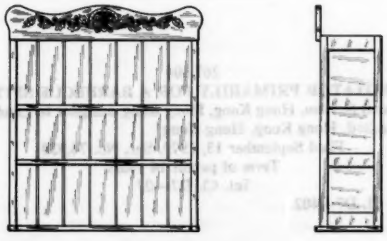
267,294
COMBINED VALET WALL RACK AND DRAWER UNIT
David Nusz, 2025 W. Mark, Layton, Utah 84041
Continuation-in-part of Ser. No. 974,128, Dec. 26, 1978, Pat. No. Des. 257,303, which is a continuation-in-part of Ser. No. 67,837, Aug. 2, 1979, Pat. No. Des. 260,586. This application September 12, 1980, Ser. No. 186,523
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—123



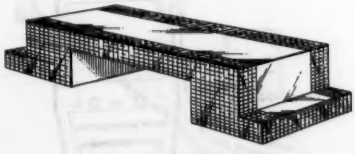
267,295
OCTAGONAL TABLE
David Blumenthal, Atlanta, Ga., assignor to Erwin-Lambeth, Inc., Thomasville, N.C.
Filed March 31, 1980, Ser. No. 135,517
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



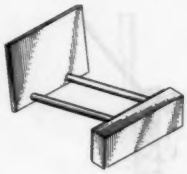
267,296
HUTCH
Henry W. Mower, Stevens Point, Wis.; Allen Seymour, Clayton, Ohio; Jerome P. Koziatek, Hinckley, Ohio, and Joseph G. Lendvay, Ravenna, Ohio, assignors to Questor Corporation, Toledo, Ohio
Filed October 16, 1980, Ser. No. 197,766
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—153



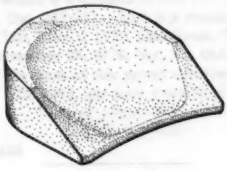
267,297
COFFEE TABLE
Bruce N. Lee, 19 Columbia Ave., Trenton, N.J. 08618
Filed December 4, 1980, Ser. No. 213,133
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



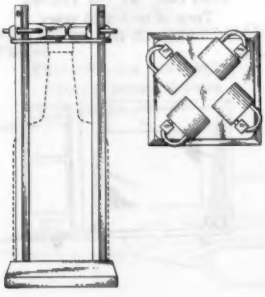
267,298
BOOK HOLDER
Milton Fischer, 145 E. 15th St., New York, N.Y. 10001
Filed October 22, 1980, Ser. No. 199,486
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—184



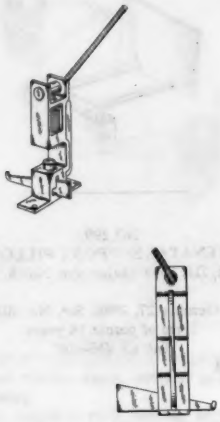
267,299
PRENATAL SUPPORT PILLOW
Richard G. Lund, III, 7564 Major Ave. North, Brooklyn Park, Minn. 55443
Filed October 27, 1980, Ser. No. 201,162
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



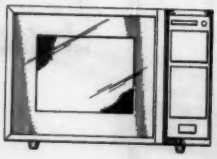
267,300
BOTTLE HOLDER
Hans Eriksson, Nygatan 11, and Sylve Ronndahl, Drevstagatan 3, both of 681 00 Kristinehamn, Sweden
Filed August 20, 1980, Ser. No. 179,723
Claims priority, application Sweden, March 3, 1980, 80-446
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—70



267,301
NUT CRACKER MECHANISM
Lawrence F. Hunt, Box #3, Hartford, Iowa 50118
Filed April 2, 1981, Ser. No. 250,255
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—98



267,302
MICROWAVE OVEN
Yoshio Suganoya; Takao Miyake, and Masayoshi Kawaiski, all of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed 1980, Ser. No. 110,786
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—351

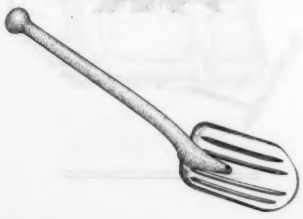


267,303
ROTATOR PRIMARILY FOR A BARBECUE SPIT
Clement S. Wan, Hong Kong, Hong Kong, assignor to Landman Limited, Hong Kong, Hong Kong
Filed September 13, 1979, Ser. No. 74,937
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—402

267,304
ROTATOR PRIMARILY FOR A BARBECUE SPIT
Clement S. Wan, Hong Kong, Hong Kong, assignor to Landman Limited, Hong Kong, Hong Kong
Filed September 13, 1979, Ser. No. 74,938
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—402

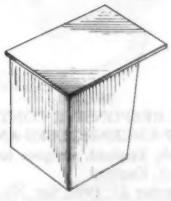
267,305
FERTILIZER APPLICATOR
Bernard J. Lempa, Jr., Houston, Tex., assignor to Lempa Mfg. Inc., Cuero, Tex.
Filed June 19, 1980, Ser. No. 161,047
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—02

267,306
SPADE
Egil Hyggen, Oslo, Norway, assignor to Elkem-Spigerverket, A/S, Oslo, Norway
Filed November 5, 1979, Ser. No. 91,106
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—10



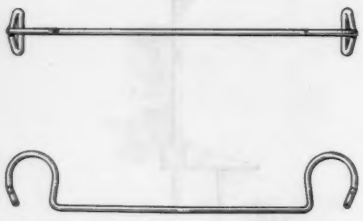
267,307
CAN RETRIEVER
Jack Lowdon, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed November 20, 1980, Ser. No. 208,800
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14

267,308
TRUSS POST CAP
George E. France, 901 W. James St., Geneva, Ill. 60134
Continuation-in-part of Ser. No. 734,713, Oct. 22, 1976, Pat. No. Des. 250,391, which is a division of Ser. No. 487,129, Jul. 10, 1974, Pat. No. Des. 242,037, which is a continuation-in-part of Ser. No. 249,760, May 2, 1972, abandoned. This application November 28, 1978, Ser. No. 964,254
The portion of the term of this patent subsequent to December 28, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—380

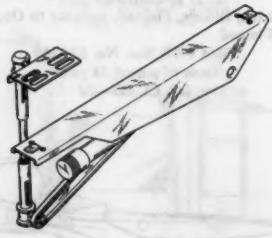


267,309
SCISSORS
Erkki O. Linden, Billnäs, Finland, assignor to Oy. Fiskars Ab, Helsinki, Finland
Filed 1980, Ser. No. 126,149
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57

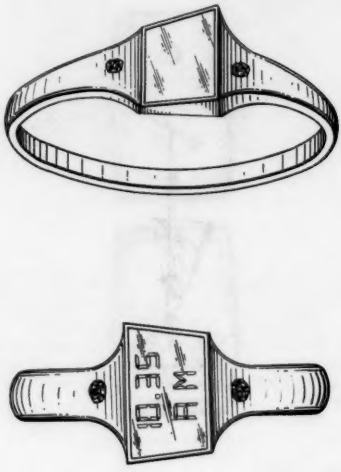
267,310
SNAP-ON FILE HANDLE
Isak Benis, 525 N. Kings Rd., Los Angeles, Calif. 90048
Filed June 9, 1980, Ser. No. 157,270
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—94



267,311
TEMPERATURE RESPONSIVE CONTROL UNIT FOR WINDOWS OF GREENHOUSES AND THE LIKE
Albert Cole, Keswick, England, assignor to Thermoforce Limited, Cockersmouth, England
Filed October 22, 1980, Ser. No. 199,634
Claims priority, application United Kingdom, May 2, 1980, 994760
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—330

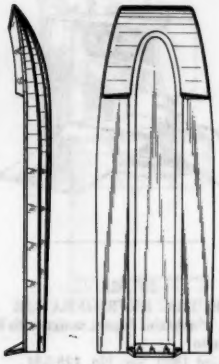


267,312
DIGITAL TIME-INDICATING FINGER RING
Neil A. Funk, Box 1607, Fort Nelson, British Columbia V0C 1R0, Canada
Filed August 25, 1980, Ser. No. 181,207
Term of patent 14 years
Int. Cl. D10—*02*; D11—*01*
U.S. Cl. D10—31

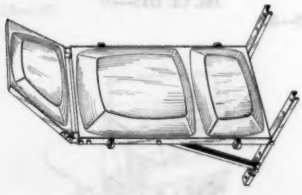


267,313
JEWELRY FINDING
W. Allen Northcutt, III, Crestwood, Ky., assignor to J. J. B. Hilliard, W. L. Lyons, Inc., Louisville, Ky.
Filed March 2, 1981, Ser. No. 239,632
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—1

267,314
AQUATIC RECREATION VEHICLE
Theodore D. Beatty, 20911 Skimmer La., Huntington Beach, Calif. 92646, and James J. Beatty, 5573 Rainier St., Ventura, Calif. 93003
Filed April 11, 1980, Ser. No. 139,692
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—300

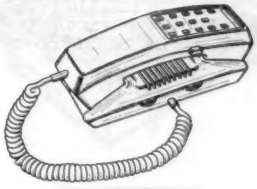


267,315
CONCERT SHELL
Robert A. Eade, #2 Heather Court, Woodbury, Conn. 06798, and Peter V. C. Quaintance, 1650 Jones, San Francisco, Calif. 94109
Filed June 29, 1979, Ser. No. 53,527
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—33



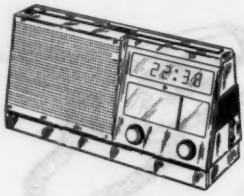
267,316
CAR TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed July 14, 1980, Ser. No. 168,590
Claims priority, application Japan, 1980, 55/001064
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

267,317
TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed October 8, 1980, Ser. No. 195,340
Claims priority, application Japan, April 11, 1980, 55-013995
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

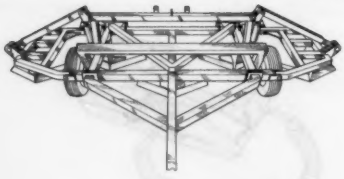


267,318
PORTABLE WIRELESS TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed October 22, 1980, Ser. No. 199,422
Claims priority, application Japan, April 25, 1980, 55/016172
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

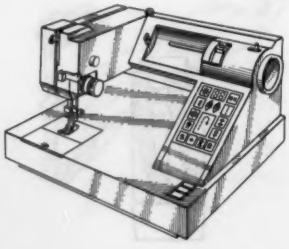
267,319
CLOCK RADIO RECEIVER
Peter H. J. Van De Ven, Valkenswaard, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed September 22, 1980, Ser. No. 189,964
Claims priority, application United Kingdom, March 25, 1980, 80/994197
Term of patent 14 years
Int. Cl. D14—*03;* D10—*01*
U.S. Cl. D14—73



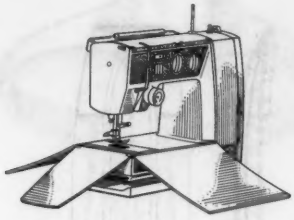
267,320
BLADE PLOUGH
Darrell C. Symonds, 106-116 Dowd St., Welshpool, Western Australia, Australia (6106)
Filed November 7, 1979, Ser. No. 92,108
Claims priority, application Australia, May 8, 1979, 77779
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—11



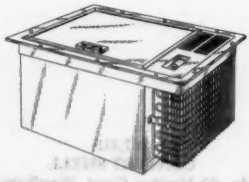
267,321
SEWING MACHINE
Giuliano Molineri, Moncalieri, Italy, assignor to NECCHI Societa per Azioni, Pavia, Italy
Filed August 9, 1979, Ser. No. 65,199
Claims priority, application Italy, 1979, 32301 B/79
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—69



267,322
SEWING MACHINE
Olindo Baruffa, Thonex, and Antonio Jimenez, Meyrin-Geneva, both of Switzerland, assignors to Mefina S.A., Fribourg, Switzerland
Filed July 25, 1980, Ser. No. 172,436
Claims priority, application Switzerland, 1980, 110933
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—70

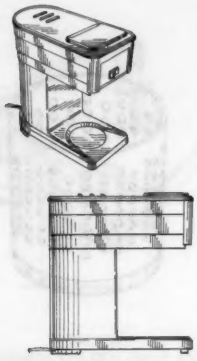


267,323
ELECTRIC REFRIGERATOR
Kazuyuki Ogiwara, Maebashi, Japan, assignor to Sawafuji Electric Co., Ltd., Japan
Filed 1980, Ser. No. 125,834
Claims priority, application Japan, September 11, 1979, 54-38414
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D15—83

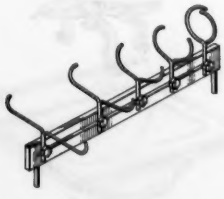


267,324
ELECTRIC REFRIGERATOR AND WARMER
Kenji Norimatsu, Ota, and Masuo Noji, Nitta, both of Japan, assignors to Sawafuji Electric Co., Ltd., Japan
Filed September 22, 1980, Ser. No. 189,863
Claims priority, application Japan, April 9, 1980, 55-13954
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D15—83

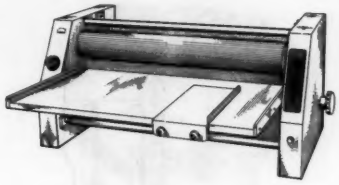
267,325
COFFEE MAKER
John D. Zimmerman, Springfield, Ill., and Joseph R. Paradis, Holden, Mass., assignors to Bunn-O-Matic Corporation, Springfield, Ill.
Filed 1981, Ser. No. 226,513
Term of patent 14 years
Int. Cl. D07—*02*; D15—*08*
U.S. Cl. D7—309



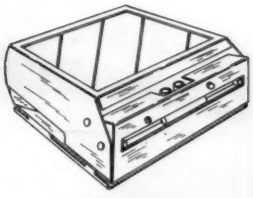
267,326
STRIP MATERIAL FOLDER
Jerry W. Lanier, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.
Filed December 24, 1980, Ser. No. 219,627
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—145



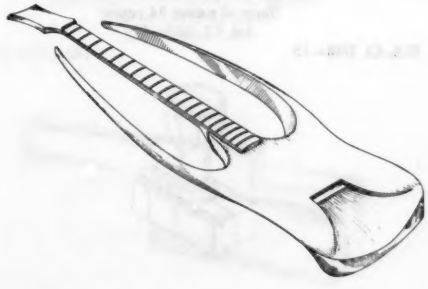
267,327
LAMINATING APPARATUS
Myron W. Shaffer, Irving, Tex., assignor to Thermo-Seal, Inc., Fort Worth, Tex.
Filed November 10, 1980, Ser. No. 205,238
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—146



267,328
DESK DRAWER MICROFICHE READER
Steven R. Runyan, Los Altos Hills; William T. Link, Berkeley, and Stephen Hobson, Palo Alto, all of Calif., assignors to Datagraphix, Inc., San Diego, Calif.
Filed March 4, 1980, Ser. No. 127,265
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—18



267,329
GUITAR
Tallie B. Cooper, 881 E. 36th Ave., Gary, Ind. 46409
Filed April 11, 1980, Ser. No. 139,195
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14



267,330

PRINTING CARTRIDGE

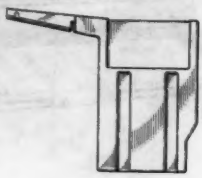
William R. Worrell, Hopkins, Minn., assignor to Kroy Industries Inc., St. Paul, Minn.

Filed October 20, 1980, Ser. No. 198,960

Term of patent 14 years

Int. Cl. D18—*01*

U.S. Cl. D18—12



267,331

PLASTIC MOUNT FOR STAMPING DIE

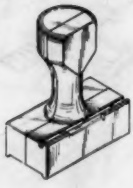
Edwin W. Goldstein, Scarsdale, N.Y., assignor to Crown Marking Equipment Co., Philadelphia, Pa.

Filed 1981, Ser. No. 225,976

Term of patent 14 years

Int. Cl. D19—*02*

U.S. Cl. D18—15



267,332

PENCIL HOLDING CONTAINER

Rino Pirovano, Piazza Castello 11, and Rino Boschet, Via Giordano Bruno 7, both of Milano, Italy

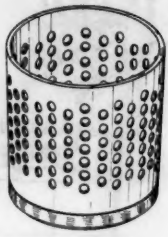
Filed August 22, 1980, Ser. No. 180,494

Claims priority, application Italy, March 24, 1980, 21268/80[U]

Term of patent 14 years

Int. Cl. D19—*02*

U.S. Cl. D19—85



267,333

TOY ALLIGATOR

John J. Sassak, 36855 Schoolcraft, Livonia, Mich. 48150

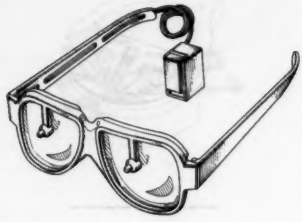
Filed October 27, 1980, Ser. No. 200,671

Term of patent 14 years

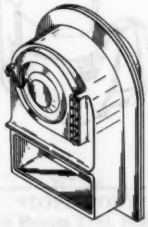
Int. Cl. D21—*01*

U.S. Cl. D21—157

267,334
NOVELTY EYE GLASSES
Peter D. Pook, Bloomington, Minn., and Donald A. Rosenwinkel, Tinley Park, Ill., assignors to Leisure Dynamics, Inc., Minneapolis, Minn.
Filed March 13, 1980, Ser. No. 124,978
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—240

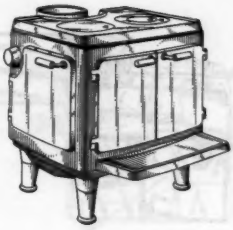


267,335
STORM WATER OUTLET
Edwin Axel, 8707 Carlisle Rd., Wyndmoor, Pa. 19118, and Philip N. Altomare, 1804 Gravers Rd., Norristown, Pa. 19401
Filed March 6, 1980, Ser. No. 127,926
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—1

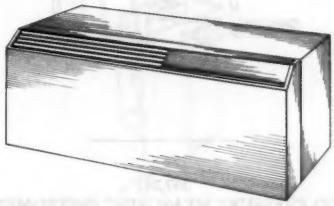


267,336
LAVATORY
John Fortuno, Alhambra, Calif., assignor to Empire-Fortuno, Ltd., South El Monte, Calif.
Filed August 8, 1980, Ser. No. 176,597
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58

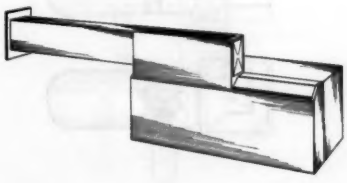
267,337
STOVE
C. Robert Cawley, Jr., Box 431, R.D. #1, Barto, Pa. 19504
Filed October 15, 1980, Ser. No. 197,263
Term of patent 3½ years
Int. Cl. D23—*03*
U.S. Cl. D23—97



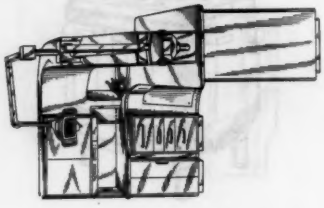
267,338
AIR CONDITIONING UNIT
Theodore S. Bolton, Liverpool; Richard D. Lang, Chittenango, and Walter W. Hoyle, Fayetteville, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed May 19, 1980, Ser. No. 151,056
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—141

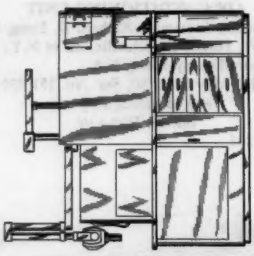


267,339
COMBINED AIR CONDITIONING UNIT AND DUCT SYSTEM
Theodore S. Bolton, Liverpool; Richard D. Lang, Chittenango, and John S. Burris, Cazenovia, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed May 19, 1980, Ser. No. 151,057
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—141

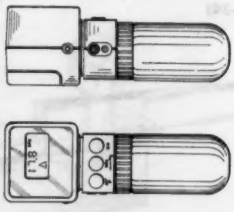


267,340
DENTAL OPERATORY UNIT
Tony Watanabe, Redondo Beach, Calif., assignor to Belmont Equipment Corp., Somerset, N.J.
Filed March 6, 1980, Ser. No. 127,781
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—4

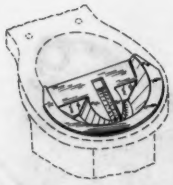




267,341
BLOOD PRESSURE MEASURING INSTRUMENT OR SIMILAR ARTICLE
Alfred Kern, Bachern; Rido Busse, Elchingen, and Reinhold Rapp, Ulm-Donau, all of Fed. Rep. of Germany, assignors to Ebauches S.A., Neuchatel, Switzerland
Filed June 23, 1980, Ser. No. 161,743
Claims priority, application Fed. Rep. of Germany, 1980, DMA/000 026
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—21

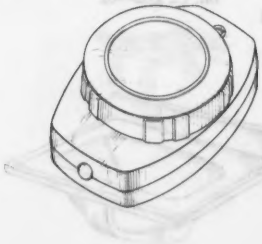


267,342
SPECIMEN COLLECTOR FOR A COMMODEOR SIMILAR ARTICLE
Rodney Laible, Omaha, Nebr., assignor to Daniel Brown, Omaha, Nebr., a part interest
Filed September 2, 1980, Ser. No. 183,232
Term of patent 14 years
Int. Cl. D24—*02, 04*
U.S. Cl. D24—57



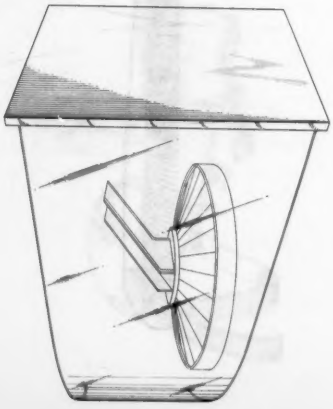
267,343
ANKLE HOLDER
Jack V. Miller, and Ruth E. Miller, both of Sierra Madre, Calif., assignors to Gravity Guidance, Incorporated, Pasadena, Calif.
Filed November 3, 1980, Ser. No. 203,707
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64

267,344
CONTACT LENS STERILIZER UNIT
Staffan Sundström, and Tore Herlestam, both of Helsingborg, Sweden, assignors to Sharp Corporation, Osaka, Japan
Filed July 30, 1980, Ser. No. 173,827
Claims priority, application Sweden, 1980, 800253
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—9

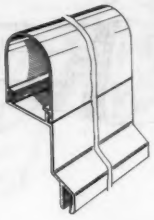


267,345
BALCONY RAILING FOR BUILDINGS OR THE LIKE
Brad Walsh, Waterloo, Canada, assignor to Balcorail Ltd., Kitchener, Canada
Filed April 2, 1980, Ser. No. 136,726
Claims priority, application Canada, 1980, 20-02-80-6
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—38

267,346
STOREFRONT
Donald Pelavin, 20936 Ramita Trail, Boca Raton, Fla. 33433
Filed April 14, 1980, Ser. No. 140,360
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—59



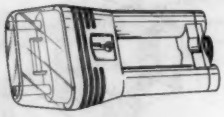
267,347
RAIL FOR BALCONY RAILING AND THE LIKE
Brad Walsh, Waterloo, Canada, assignor to Balcorail Ltd., Kitchener, Canada
Filed April 2, 1980, Ser. No. 136,724
Claims priority, application Canada, 1980, 20-02-80-7
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



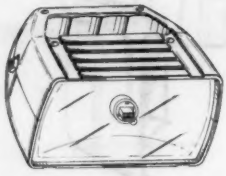
267,348
BASE RAIL FOR BALCONY RAILING AND THE LIKE
Brad Walsh, Waterloo, Canada, assignor to Balcorail Ltd., Kitchener, Canada
Filed April 2, 1980, Ser. No. 136,725
Claims priority, application Canada, 1980, 20-02-80-8
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

267,349
CAR LIGHT
Takehiro Asano, Tokyo, Japan, assignor to Dai Chi Shoji Co., Ltd., Tokyo, Japan
Filed 1980, Ser. No. 116,399
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—37

267,350
FLASHLIGHT
Robert G. Simmons, 350 The West Mall, Etobicoke, Ontario, Canada (M9C 1E6)
Filed April 30, 1980, Ser. No. 145,786
Claims priority, application Canada, July 11, 1979, 07-11-79-9
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—48

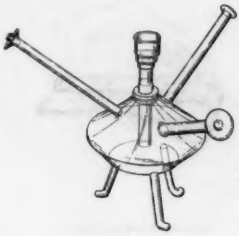


267,351
ELECTRIC LIGHT
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed June 20, 1980, Ser. No. 161,566
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—50



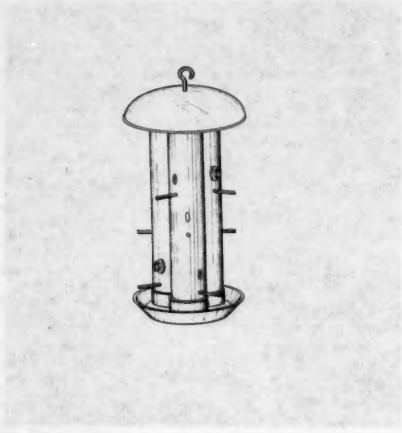
267,352
COMBINED COVER AND STAND FOR ELECTRIC LIGHT
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed June 20, 1980, Ser. No. 161,567
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D26—118

267,353
PIPE
S. Franklin Sher, 609 Lochnor, Danville, Calif. 94526
Filed May 1, 1980, Ser. No. 145,724
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03

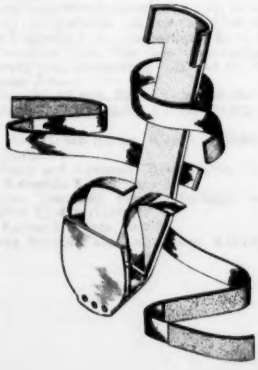


267,354
COMB
Walter Tihonovich, 1330 Pine, Pueblo, Colo. 81004
Filed 1980, Ser. No. 121,392
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—21

267,355
BIRD FEEDER
Morton L. Blasbalg, 26 Sandro Dr., Warwick, R.I. 02886
Filed December 22, 1980, Ser. No. 218,797
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15



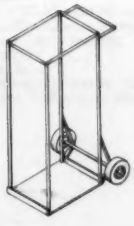
267,356
LEG SPLINT FOR HORSES
John S. Kimzey, P.O. Box 1001, Woodland, Calif. 95695
Filed November 3, 1980, Ser. No. 203,454
Term of patent 14 years
Int. Cl. D30—*01*
U.S. Cl. D30—34



267,357
GUTTER CLEANING TOOL
Alan G. Hillstrom, 18405 Tamarack Dr., Brookfield, Wis. 53005
Filed August 4, 1980, Ser. No. 175,359
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. 32—46

267,358
MOBIL HORSE FOR TRANSPORTING LEATHER
Hugh F. Carville, 110 S. Williams St., Johnstown, N.Y. 12095
Filed 1981, Ser. No. 234,395
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—17

267,359
WOOD CART
Roger E. Mustard, Rte. 2, Box 154, Nickelsville, Va. 24271
Filed April 23, 1981, Ser. No. 256,708
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—26

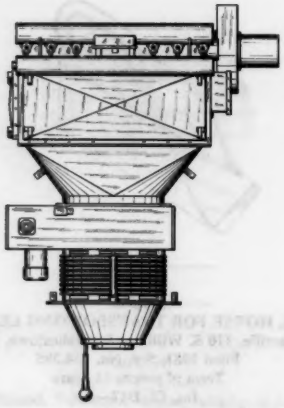


267,360

DUST FREE LOADING APPARATUS

Ron Pair, 24112 Harper Ave., St. Clair Shores, Mich. 48080

Filed May 23, 1980, Ser. No. 152,787
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—28

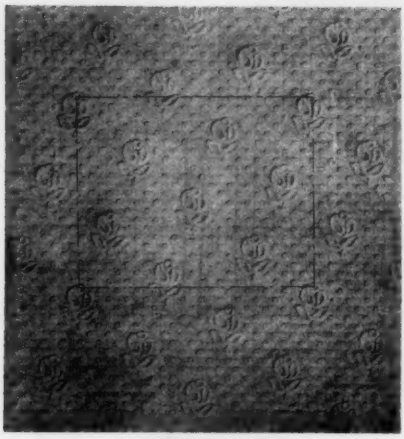


267,361

EMBOSSED PAPER TOWELING

Galyn A. Schulz, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Filed 1981, Ser. No. 232,215
Term of patent 14 years
Int. Cl. DO5—*06*
U.S. Cl. D59—2 B



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF DECEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See*—
Zabiak, Daniel M., 4,365,035, Cl. 524-283.000.

A. W. Anderberg Manufacturing Co.: *See*—
Taylor, George A., 4,364,201, Cl. 49-248.000.

AB Asea-Atom: *See*—
Vesterlund, Gunnar, 4,364,781, Cl. 148-6.300.

AB Bonnierforetagen: *See*—
Fogelberg, Ernst R., 4,364,994, Cl. 428-316.600.

AB Volvo Penta: *See*—
Brandt, Lennart H.; Hultmark, Ingvar O.; Petersson, Lars H.; and Soderbaum, Carl U., 4,364,711, Cl. 416-142.000.

Larkin, Mark E., 4,364,387, Cl. 128-214.00C.

Abe, Tokuji: *See*—
Imada, Kiyoshi; Abe, Tokuji; and Ueno, Susumu, 4,364,970, Cl. 427-40.000.

Abel, William A.: *See*—
Massey, Lester G.; Brabets, Robert I.; and Abel, William A., 4,364,740, Cl. 44-1.00C.

Abthoff, Jorg: *See*—
Fricker, Ludwig; and Abthoff, Jorg, 4,364,339, Cl. 123-41.420.

ACF Industries, Incorporated: *See*—
Meyer, Danny S., 4,364,542, Cl. 251-214.000.

Acheson Industries, Inc.: *See*—
Levine, Walter E., 4,364,719, Cl. 425-78.000.

Ackermann, Jakob: *See*—
Bitzer, Diethelm; Kramis, Jost; and Ackermann, Jakob, 4,364,746, Cl. 51-298.000.

Acosta, George M.: *See*—
Rosen, Jonathan J.; Acosta, George M.; and Bowman, Christopher J., 4,364,126, Cl. 3-1.500.

Adachi, Tuneyuki; and Nakamura, Hiroshi, to Dainippon Ink & Chemicals, Inc. Glass fiber-reinforced polyarylene sulfide resin composition. 4,365,037, Cl. 524-449.000.

Adair, Paul C.: *See*—
Crutchfield, E. Bryant; Wright, Richard F.; Adair, Paul C.; Harris, Seth O.; Shackle, Dale R.; and Williams, Dennis L., 4,365,018, Cl. 430-139.000.

Adamson, Lee E., to Beatrice Foods Co. Horizontal ice cream cone dispenser. 4,364,491, Cl. 221-267.000.

Adell, Lars. Double acting cone coupling. 4,364,687, Cl. 403-370.000.

Advanced Glass Systems Corp.: *See*—
Smith, W. Novis, Jr.; and Bolton, Nelson P., 4,364,786, Cl. 156-99.000.

Advanced Semiconductor Materials Die Bonding Inc.: *See*—
Ott, James D., 4,364,707, Cl. 414-744.00B.

AE Development Corporation: *See*—
Prussin, Samuel B., 4,364,515, Cl. 239-8.000.

AEL Microtel, Ltd.: *See*—
Froese, Abram; Onotera, Larry Y.; and Liebelt, Alvin, 4,365,346, Cl. 455-42.000.

Agency of Industrial Science & Technology: *See*—
Maeda, Yuji, 4,364,593, Cl. 294-106.000.
Tabata, Hideyo; Kuwahara, Yoshitaka; Machida, Michihide; Kume, Shyoichi; Iga, Takeo; Saitoh, Kazuo; and Tomura, Shinji, 4,365,022, Cl. 501-97.000.

Agfa-Gevaert AG: *See*—
Biedermann, Ernst; and Rapp, Heinz, 4,364,147, Cl. 15-404.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Hocker, Jurgen; and Ranz, Erwin, 4,365,012, Cl. 430-19.000.

Ahlgren, David W.: *See*—
Munter, Arnold M.; and Ahlgren, David W., 4,364,963, Cl. 426-283.000.

Ahrens, Norbert; and Klockenbusch, Heinrich, to Krupp Polysius AG. Storage and mixing silo for bulk material. 4,364,665, Cl. 366-106.000.

Aichelmann, Frederick J., Jr.; and Bachman, Bruce E., to International Business Machines Corp. Two speed recirculating memory system using partially good components. 4,365,318, Cl. 365-200.000.

Aikawa, Kazuo: *See*—
Saito, Shinichi; Aikawa, Kazuo; Orino, Michio; Aoi, Kazuya; and Kusakabe, Hideo, 4,365,057, Cl. 528-503.000.

Airco, Inc.: *See*—
Terrell, Ross C.; and Hansen, Kirsten, 4,365,097, Cl. 568-684.000.

Airesman, Charles: *See*—
Stern, Harry; and Airesman, Charles, 4,364,279, Cl. 73-862.660.

Aisin Kako Kabushiki Kaisha: *See*—
Yamamoto, Yasunobu; Sakabe, Toshiaki; and Hamada, Eizi, 4,364,997, Cl. 428-372.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Kawabata, Yasuhiro; and Aoki, Kongo, 4,364,301, Cl. 91-20.000.
Tani, Akira; and Yamazaki, Takeo, 4,364,284, Cl. 74-540.000.
Toyoda, Minoru, 4,364,250, Cl. 70-456.00R.
Yamamoto, Yasunobu; Sakabe, Toshiaki; and Hamada, Eizi, 4,364,997, Cl. 428-372.000.

Aizawa, Hideo: *See*—
Ikeda, Hideo; and Aizawa, Hideo, 4,364,578, Cl. 280-95.00R.

Aizawa, Hiroshi: *See*—
Senuma, Michio; Shimada, Fumio; Shigeta, Yoshihiro; Saito, Syuichiro; Aizawa, Hiroshi; Ohniwa, Takehiko; and Canon Denshi Kabushiki Kaisha, 4,364,654, Cl. 354-234.000.

Akagami, Akira: *See*—
Ohno, Akira; Katayama, Shitomi; Senaha, Susumu; Kyo, Suizo; and Akagami, Akira, 4,364,637, Cl. 350-288.000.

Akagawa, Masaki: *See*—
Hayashi, Yukichi; Tamura, Masauuki; Sugimoto, Osamu; Takizawa, Masayoshi; Nishioka, Tatsujiro; Akagawa, Masaki; and Yokohda, Yutaka, 4,364,404, Cl. 133-4.00A.

Akahane, Ryozo: *See*—
Shimazoe, Michitaka; Matsuoka, Yoshitaka; Akahane, Ryozo; Shimizu, Yasushi; Nemoto, Hideyuki; and Tanabe, Masanori, 4,364,276, Cl. 73-721.000.

Akers, Roy, to Bell & Howell Company. Conveyor arrangement for mail sorting machines. 4,364,554, Cl. 271-272.000.

Akzona Incorporated: *See*—
Brucher, Walter; Hense, Karl H.; and Modtler, Reiner, 4,364,983, Cl. 428-85.000.

Albert Obrist AG: *See*—
Obrist, Albert, 4,364,218, Cl. 53-331.500.

Albertazzi, Gastone, to Finike Italiana Marposs, S.p.A. Apparatus for checking the cage of a constant velocity joint. 4,364,181, Cl. 33-174.00L.

Alcan Aluminum Corporation: *See*—
Gailey, J. Lynn; and Wollam, Carl A., 4,364,215, Cl. 52-488.000.

Alexandron, Amiad: *See*—
Manor, Shalom; Bar-Guri, Moshe; Alexandron, Amiad; and Kreisel, Moshe, 4,364,914, Cl. 423-399.000.

Alexeeff, Victor, to Nestier Canada Inc. Container lid. 4,364,489, Cl. 220-334.000.

Alfa Romeo S.p.A.: *See*—
Garcea, Giampaolo, 4,364,338, Cl. 123-41.100.

Alin, Arne, to Luftkonditionering AB. Electrical unit for stoves, fireplaces and like devices. 4,365,142, Cl. 219-374.000.

Aliprandini, Pino. Bath for the galvanoplastic deposition of a yellow-gold tinted metallic alloy. 4,364,804, Cl. 204-44.000.

Allegany Technology, Inc.: *See*—
Stern, Harry; and Airesman, Charles, 4,364,279, Cl. 73-862.660.

Allen, David T.; and Baker, Keith R., to Deere & Company. Video planter guidance aid. 4,365,268, Cl. 358-93.000.

Allen & Hanburs Limited: *See*—
Cook, Peter B.; and Hunt, John H., 4,364,923, Cl. 424-46.000.

Allis-Chalmers Corporation: *See*—
Dunseith, S. Michael, 4,364,749, Cl. 55-73.000.

Alpkvist, Jan A., to Forenade Farbiksverken. Method and apparatus for dosing an air-fuel mixture in burners having evaporating tubes. 4,364,724, Cl. 431-11.000.

Aluminum Company of America: *See*—
Goodboy, Kenneth P., 4,364,858, Cl. 252-463.000.

American Cyanamid Company: *See*—
Katz, Daniel S.; and Olson, Kenneth E., 4,364,913, Cl. 423-365.000.

American Electronic Laboratories, Inc.: *See*—
Shillady, Robert W., 4,365,214, Cl. 333-33.000.

American Heyer-Schulte Corporation: *See*—
Redmond, Russell J.; and Hannula, Donald L., 4,364,395, Cl. 604-10.000.

American Home Products Corporation: *See*—
Sulkowski, Theodore S.; Bergey, James L.; and Mascitti, Albert A., 4,365,063, Cl. 546-123.000.

American Microsystems, Inc.: *See*—
Haque, Yusuf A., 4,365,204, Cl. 328-127.000.

American Roller Company: *See*—
Hyllberg, Bruce E., 4,364,313, Cl. 101-401.100.

American Standard Inc.: *See*—
Parkison, Richard G.; and Hofstetter, Edward G., Jr., 4,364,523, Cl. 239-533.140.

AMP Incorporated: *See*—
Feldman, Steven, 4,365,230, Cl. 338-180.000.

Andersen, Hans S.; and Christiansen, Preben, to Danfoss A/S. Arrangement for influencing the operating quantity of a servomotor. 4,364,304, Cl. 91-420.000.

Anderson, Don L., Jr.: *See*—
Beck, Boyd R.; Stewart, Lamar H.; Tapp, Steven; Anderson, Don L., Jr.; and Nuffer, Daniel E., 4,364,797, Cl. 202-181.000.

Anderson, Raymond P.; Schmalzer, David K.; and Wright, Charles H., to Pittsburg & Midway Coal Mining Co., The. Method for controlling boiling point distribution of coal liquefaction oil product. 4,364,817, Cl. 208-8.0LE.

Ando, Naoyoshi: *See*—
Ishii, Yoshiaki; Ando, Naoyoshi; Kume, Tsutomu; and Fujinami, Shoaku, 4,364,796, Cl. 201-4.000.

Andoh, Haruo; Kitaoka, Susumu; Sueyoshi, Toshinobu; Ishida, Hikaru; and Kato, Akira, to Hitachi Maxell, Ltd. Magnetic recording medium. 4,364,988, Cl. 428-212.000.

Anguille, Jean M.: *See*—
Fechant, Louis J. M.; Siffroi, Lucien; and Anguille, Jean M., 4,365,223, Cl. 335-281.000.

Anjou, Gunnar. Child-proof container. 4,364,488, Cl. 220-281.000.

Anspach, Roy L.: *See*—
Campbell, James R.; and Anspach, Roy L., 4,365,004, Cl. 428-593.000.

Anthonsen, Reiner: *See*—
Sack, Wieland; Anthonsen, Reiner; and Kertesz, Ferenc, 4,364,971, Cl. 427-44.000.

Anthony, John: *See*—
Horner, Jerome T.; Anthony, John; and Fraser, William A., 4,364,981, Cl. 428-35.000.

Aoi, Kazuya: *See*—
Saito, Shinichi; Aikawa, Kazuo; Orino, Michio; Aoi, Kazuya; and Kusakabe, Hideo, 4,365,057, Cl. 528-503.000.

Aoki, Kongo: *See*—
Kawabata, Yasuhiro; and Aoki, Kongo, 4,364,301, Cl. 91-20.000.

Aoki, Masao: *See*—
Nakano, Nobumasa; Takahashi, Noboru; and Aoki, Masao, 4,365,312, Cl. 364-900.000.

Apfelbaum, Jerome G.: *See*—
John, Raymond; Apfelbaum, Jerome G.; and Moore, Robert L., 4,364,308, Cl. 99-351.000.

Application Engineering Corporation: *See*—
Waters, Michael A., 4,364,893, Cl. 264-325.000.

Arabshian, John; and Mittelstaedt, Paul O. Bale-handling apparatus. 4,364,700, Cl. 414-24.500.

Aragona, Louis. Punching bag apparatus and supporting means therefore. 4,364,558, Cl. 272-78.000.

Arbir, Francis W.; Raden, Daniel S.; and Narducy, Kenneth W., to Abbott Laboratories. Catalyst for making polyurethanes. 4,364,850, Cl. 252-426.000.

Archer, William R., to General Electric Company. Low loss snubber circuit. 4,365,171, Cl. 307-253.000.

Arnaud, Francoise: *See*—
Labeyrie, Etienne; Poirier, Jean-Pierre; and Arnaud, Francoise, 4,364,946, Cl. 424-249.000.

Arnold, Dan M.; and Paap, Hans J., to Texaco Inc. Detection of impurities in a fluid containing free gas using nuclear techniques. 4,365,154, Cl. 250-270.000.

Arnold, Jones B.; Burleson, Robert R.; and Pardue, Robert M., to United States of America, Energy. Positional reference system for ultraprecision machining. 4,365,301, Cl. 364-475.000.

Arondel, Patrick; and Lepeytre, Jean P., to Thomson - CSF. Catadioptric device intended for an optical responder. 4,364,631, Cl. 350-503.000.

Arp, George F.; and Nichols, James M., to Heldor Associates, Inc. Pool panel connector system. 4,364,211, Cl. 52-245.000.

Arthur Guinness Son and Company (Park Royal) Limited: *See*—
Raynes, Stephen H.; and Miller, David H., 4,364,493, Cl. 222-399.000.

ASA S.A.: *See*—
Faure, Jean-Louis, 4,364,225, Cl. 57-291.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Yosizato, Akihiko; Morifuji, Yoshinori; Kondo, Kunio; and Yoshino, Masatsugu, 4,365,032, Cl. 524-99.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Itoh, Kiyoshi; Kamoshita, Tetuo; Sakai, Teruo; and Kawasaki, Harumi, 4,364,535, Cl. 248-123.100.

Asai, Mitsuko; Nakahama, Kazuo; and Izawa, Motowo, to Takeda Chemical Industries, Ltd. Maytansinoids. 4,364,866, Cl. 260-239.30P.

Asal, Jerrold R., to Caterpillar Tractor Co. Implement assembly with pivot connection. 4,364,439, Cl. 172-821.000.

Asano, Masamichi: *See*—
Iwahashi, Hiroshi; and Asano, Masamichi, 4,365,316, Cl. 365-72.000.

Asano, Shiro, to Mitsui Toatsu Chemicals, Incorporated. Process for production of acrylamide. 4,365,090, Cl. 564-127.000.

ASEA Aktiebolag: *See*—
Madsen, Kristian D., 4,365,177, Cl. 310-61.000.

Ashland Oil, Inc.: *See*—
Blegen, James R., 4,365,039, Cl. 524-773.000.

Ashman, Leland E., to Ceres Electronics Corporation. Method and means of rapidly distnguishing a simulated diamond from natural diamond. 4,364,677, Cl. 374-44.000.

ASI Systems, Inc.: *See*—
Pasternack, Henry J.; and Keffer, Garry C., 4,365,190, Cl. 323-211.000.

Asik, Joseph R., to Ford Motor Company. Ignition system employing plasma spray. 4,364,342, Cl. 123-143.00B.

Askwith, Herbert; and Sage, Larry, to N.E.R.G. Enterprises, Inc. Multi-media leak test apparatus. 4,364,261, Cl. 73-40.000.

Aslund, Christer: *See*—
Nilsson, Peter; and Aslund, Christer, 4,364,162, Cl. 419-26.000.

Astle, William H. Adjustable tool holder. 4,364,290, Cl. 82-36.00R.

Atago, Takeshi: *See*—
Kosuge, Tokuo; Atago, Takeshi; and Karino, Kimiji, 4,364,354, Cl. 123-437.000.

Athe, Christian: *See*—
Genini, Maurice; Athe, Christian; and Aubert, Jean-Paul, 4,364,418, Cl. 138-103.000.

Atkins, Donald A.; and Atkins, Marilyn M. Oil filter with turn attachment. 4,364,829, Cl. 210-238.000.

Atkins, Marilyn M.: *See*—
Atkins, Donald A.; and Atkins, Marilyn M., 4,364,829, Cl. 210-238.000.

Atlantic Richfield Company: *See*—
Hsu, Chao-Yang; and Kesling, Haven S., Jr., 4,365,079, Cl. 560-191.000.

Atsumi. Toru: *See*—
Nakamura, Yukinobu; Nakajima, Tsuneo; Atsumi, Toru; and Sakai, Kunitaka, 4,364,429, Cl. 165-28.000.

Atwood Vacuum Machine Company: *See*—
Kemp, James M.; and Phillips, Robert N., 4,364,450, Cl. 180-336.000.

Aubert, Jean-Paul: *See*—
Genini, Maurice; Athe, Christian; and Aubert, Jean-Paul, 4,364,418, Cl. 138-103.000.

Aubert, Michel; and Bret, Antoine, to Commissariat a l'Energie Atomique. Assembly for passage through a containment slab for transferring irradiated nuclear fuel. 4,364,899, Cl. 376-264.000.

Autissier, Denise; and Barthelemy, Pierre, to Roussel Uclaf. Derivatives of coenzyme B_{12}. 4,364,939, Cl. 424-180.000.

Automation Industries, Inc.: *See*—
Sharpe, Donald E., 4,364,274, Cl. 73-615.000.

Axelsson, Per A. T. Peridontal probe. 4,364,730, Cl. 433-141.000.

Azuma, Haruki: *See*—
Nishihara, Masao; Fukui, Yoshinori; Kitamura, Yoshio; Kamikawa, Yoshiyuki; and Azuma, Haruki, 4,364,251, Cl. 72-58.000.

B.P.B. Industries Limited: *See*—
Buchanan, Archibald, 4,364,510, Cl. 229-62.500.

B. R. Choiniere Ltee: *See*—
Touchette, Bernard, 4,364,333, Cl. 119-52.00R.

Baader, Helmut. Snap switch as well as a method for its manufacture. 4,365,123, Cl. 200-67.0DA.

Baba, Yuko: *See*—
Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, 4,364,608, Cl. 301-37.0SS.

Babb, Larry F.; and Noveske, Walter J., to Emerson Electric Co. Drum type sewer cleaner. 4,364,139, Cl. 15-104.3SN.

Babcock, Charles D.: *See*—
Kyriakides, Stelios; and Babcock, Charles D., 4,364,692, Cl. 405-168.000.

Baccini, Adolfo. Wind engine with radial flow wheel, partially protected, with fixed blades of large diameter. 4,365,166, Cl. 290-55.000.

Bachman, Bruce E.: *See*—
Aichelmann, Frederick J., Jr.; and Bachman, Bruce E., 4,365,318, Cl. 365-200.000.

Back, Gerhard: *See*—
Beffa, Fabio; Back, Gerhard; and Schutz, Hans U., 4,364,864, Cl. 260-145.00B.

Badagnani, Guido; and Zino, Costanzo, to Ing. C. Olivetti & C., S.p.A. Electronic accounting machine with split display. 4,365,314, Cl. 364-900.000.

Bainton, Herbert W., to USM Corporation. Roll bending apparatus. 4,364,158, Cl. 29-116.0AD.

Baji, Toru: *See*—
Koike, Norio; Baji, Toru; Tsukada, Toshihisa; and Yamamoto, Hideaki, 4,364,973, Cl. 427-75.000.

Baker, Bernard S., to Energy Research Corporation. Fuel cell system for mobile applications. 4,365,006, Cl. 429-17.000.

Baker, Keith R.: *See*—
Allen, David T.; and Baker, Keith R., 4,365,268, Cl. 358-93.000.

Baker, Paul A.; and Hoell, John W., to Bell Telephone Laboratories, Incorporated. Electrical jack assembly. 4,364,625, Cl. 339-183.000.

Baker Perkins Holdings Limited: *See*—
Blakelock, Wallace J., 4,364,467, Cl. 198-486.000.

Baker, Richard H., to Reliance Electric Company. Protection circuit for switching transistors serially connected between a D.C. voltage source. 4,365,281, Cl. 361-91.000.

Bakke, Even: *See*—
Willett, Howard P.; and Bakke, Even, 4,364,910, Cl. 423-242.000.

Bakshi, Kiran R., to Chevron Research Company. Process for recovering maleic anhydride by condensation. 4,364,748, Cl. 55-27.000.

Ballard, Thomas R.: *See*—
Louis, Paul R.; Sorensen, Eugene R.; and Ballard, Thomas R., 4,364,723, Cl. 425-384.000.

Ballato, Arthur; and Vig, John R., to United States of America, Army. Method of fabricating acceleration resistant crystal resonators and acceleration resistant crystal resonators so formed. 4,365,182, Cl. 310-361.000.

Ballies, Uwe W. Separating member in a separating tube for centrifugal separation. 4,364,832, Cl. 210-518.000.

Bando, Yasuo: *See*—
Umemura, Sumio; Ohdan, Kyoji; Sakai, Fumihiko; Suzuki, Kenichi; Bando, Yasuo; Hogami, Toshihiko; and Fuginaga, Masataka, 4,364,844, Cl. 252-435.000.

Bandoh, Tadaaki: *See*—
Fukunaga, Yasushi; and Bandoh, Tadaaki, 4,365,311, Cl. 364-900.000.

Bar-Guri, Moshe: *See*—
Manor, Shalom; Bar-Guri, Moshe; Alexandron, Amiad; and Kreisel, Moshe, 4,364,914, Cl. 423-399.000.
Bard, Allen J.; Fan, Fu-Ren F.; and Reichman, Benjamin, to United States of America, Navy. Photoelectrochromic generator and display device. 4,365,010, Cl. 429-111.000.
Bargeton, Gilbert L.; and Beynie, Claude P., to Societe Anonyme de Telecommunications. End station digital transmission link relieving system. 4,365,247, Cl. 340-825.010.
Bargeton, Gilbert L.; and Beynie, Claude P., to Societe Anonyme de Telecommunications. Digital transmission link relief triggering system. 4,365,248, Cl. 340-825.010.
Barmag Barmer Maschinenfabrik AG: *See*—
Schippers, Heinz; Branscheid, Werner; Lenk, Erich; and Hardt, Udo, 4,364,717, Cl. 417-407.000.
Barna, Alex J. Trouser fly construction. 4,364,124, Cl. 2-234.000.
Barnes, George H.; Lundstrom, Stephen F.; and Shafer, Philip E., to Burroughs Corporation. Array processor architecture connection network. 4,365,292, Cl. 364-200.000.
Barnes Group Inc.: *See*—
Zavatkay, Robert J., 4,364,202, Cl. 49-352.000.
Barnes, Robert L., to Eastman Kodak Company. Process for recovery of rhodium values. 4,364,907, Cl. 423-22.000.
Barnum, Harry W.: *See*—
Oswald, Alexis A.; and Barnum, Harry W., 4,365,030, Cl. 523-508.000.
Baron, Gerard, to Fitexa S.A. Pre-grown turf and manufacturing of pre-grown turf. 4,364,197, Cl. 47-56.000.
Barrett, Richard C., to John Lysaght (Australia) Limited. Stripping excess coating liquid from moving strip materials. 4,364,327, Cl. 118-102.000.
Barry, Leon G.; and Rieman, Willis E., to Fasco Industries, Inc. Plug-in type fuse. 4,365,226, Cl. 337-198.000.
Bartels-Keith, James R.; and Karger, Eva R., to Polaroid Corporation. Bicyclic reductone developing agents. 4,365,085, Cl. 560-251.000.
Barth, Wayne E., to Pfizer Inc. Bis-esters of alkanediols as antibacterial agents. 4,364,957, Cl. 424-271.000.
Barthel, Thomas C., to Medtronic, Inc. Circuit and method for measuring PSA output and energy. 4,364,396, Cl. 128-419.0PT.
Barthel, Thomas C.: *See*—
Nelms, George E.; Barthel, Thomas C.; and Bergland, William J., 4,365,290, Cl. 364-200.000.
Barthelemy, Pierre: *See*—
Autissier, Denise; and Barthelemy, Pierre, 4,364,939, Cl. 424-180.000.
Bartlett, Joel F.: *See*—
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,365,295, Cl. 364-200.000.
Barto, Robert M., Jr.; Lopata, Ira; and Emden, Bernard V., to Ragen Precision Industries, Inc. Leader pin. 4,364,529, Cl. 242-195.000.
Bass, C. Joe; and Peterson, Elmer R., to Hughes Tool Company. Seal assembly. 4,364,432, Cl. 166-290.000.
Bast, Eleanor A.; DuBois, Jean-Pierre; and MacLagen, Robert T., to Sunbeam Corporation. Thermostatically controlled dual temperature electric hair curling iron. 4,365,140, Cl. 219-225.000.
Bateman, Roger S., to Tektronix, Inc. Gain stabilized microchannel plates and MCP treatment method. 4,365,150, Cl. 250-207.000.
Bates, Barry T. Running shoe with differential cushioning. 4,364,189, Cl. 36-31.000.
Battelle Memorial Institute: *See*—
Thomas, David L.; Pope, William S.; and Huckabay, William B., 4,364,446, Cl. 181-120.000.
Verber, Carl M.; and Kenan, Richard P., 4,364,633, Cl. 350-96.140.
Bauman, William C.: *See*—
Lee, John M.; and Bauman, William C., 4,364,909, Cl. 423-157.000.
Baumann, Robert P.; Blais, Marcel; and Spiess, Irwin, to United States of America, Army. Nitration of cellulose. 4,365,059, Cl. 536-35.000.
Bayer Aktiengesellschaft: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,364,955, Cl. 424-269.000.
Materne, Carsten, 4,364,952, Cl. 424-266.000.
Bayerische Motoren Werke A.G.: *See*—
Lohner, Ludwig, 4,364,733, Cl. 440-2.000.
Baylor College of Medicine: *See*—
McNair, Douglas S., 4,365,199, Cl. 324-318.000.
Beatrice Foods Co.: *See*—
Adamson, Lee E., 4,364,491, Cl. 221-267.000.
Keyes, Richard M., 4,364,666, Cl. 366-142.000.
Beatty, William T., to Rail-Or-Trail Corp. Convertible rail-highway vehicle support system. 4,364,315, Cl. 105-215.00C.
Beauducel, Claude; and Cretin, Jacques, to Institut Francais du Petrole; and Compagnie Generale de Geophysique. Device for determining the instant of reception of an acoustic wave. 4,365,320, Cl. 367-21.000.
Becht, Cletus A.; Krishnan, Ramamoorthy M.; and Hogan, James M., to Goodyear Tire & Rubber Company, The. Method of molding multiply reinforced panels and/or belts. 4,364,887, Cl. 264-171.000.
Beck, Boyd R.; Stewart, Lamar H.; Tapp, Steven; Anderson, Don L., Jr.; and Nuffer, Daniel E., to Stil Sun Oil, Inc. Automatically fed distillation and fractionation system. 4,364,797, Cl. 202-181.000.
Becker, Henning: *See*—
Weimer, Gunther; and Becker, Henning, 4,365,167, Cl. 307-66.000.
Becton, Dickinson and Company: *See*—
Bittings, Gilbert S., 4,364,903, Cl. 422-101.000.
Beffa, Fabio; Back, Gerhard; and Schutz, Hans U., to Ciba-Geigy Corporation. 1:2 Cobalt and chromium complex unsymmetrical azo dyes. 4,364,864, Cl. 260-145.00B.
Belardinelli, Luiz: *See*—
Berne, Robert M.; Belardinelli, Luiz; and Rubio, Rafael, 4,364,922, Cl. 424-9.000.
Belden Corporation: *See*—
Sorensen, Ronald J., 4,364,289, Cl. 81-9.510.
Bell, Cecil R.: *See*—
Nakhle, George D.; Bell, Cecil R.; Edwards, Arthur R.; Lathery, Willie M.; and Patel Navin D., 4,364,320, Cl. 112-262.200.
Bell & Howell Company: *See*—
Akers, Roy, 4,364,554, Cl. 271-272.000.
Bell Telephone Laboratories, Incorporated: *See*—
Baker, Paul A.; and Hoell, John W., 4,364,625, Cl. 339-183.000.
Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,365,119, Cl. 179-170.200.
Golovchenko, Jene A.; and Levesque, Richard A., 4,365,156, Cl. 378-84.000.
Joel, Amos E., Jr., 4,365,111, Cl. 178-22.130.
Kamgar, Avid; and Sinha, Ashok K., 4,364,779, Cl. 148-1.500.
Lampert, Norman R., 4,365,222, Cl. 333-238.000.
Leamy, Harry J.; and Seidel, Thomas E., 4,364,778, Cl. 148-1.500.
Mills, Allen P., Jr., 4,365,160, Cl. 250-396.00R.
Bellows, Richard J.: *See*—
Grimes, Patrick G.; and Bellows, Richard J., 4,365,009, Cl. 429-50.000.
Benbow, Eugene C.: *See*—
Halstead, Kenneth G.; Benbow, Eugene C.; and Coyle, Forrest E., 4,365,194, Cl. 324-116.000.
Bendix Corporation, The: *See*—
Colpaert, James J., 4,364,456, Cl. 188-106.00A.
Euler, Richard W., 4,364,615, Cl. 308-236.000.
Beneke, Wolfgang; Teichmann, Paul; and Schubert, Wolfgang, to Trutzschler GmbH & Co. KG. Accident prevention system for machines having one or more movable components. 4,364,151, Cl. 19-0.200.
Beneke, Wolfgang; Jager, Walter; and Teichmann, Paul, to Trutzschler GmbH & Co. KG. Apparatus for removing waste from a fiber processing machine. 4,364,153, Cl. 19-107.000.
Benson & Hedges (Canada) Inc.: *See*—
Mainville, Jacques, 4,364,425, Cl. 150-51.000.
Bercik, Paul G.: *See*—
Morganson, Neal E.; and Bercik, Paul G., 4,365,105, Cl. 585-525.000.
Berg, Morris; Schaefer, Carl F.; and Johnston, William J., to General Motors Corporation. Ceramic filters for diesel exhaust particulates and methods for making. 4,364,761, Cl. 55-523.000.
Berger, Jean L.; and Coutures, Jean L., to Thomson-CSF. Charge-transfer switched-capacity filter. 4,365,217, Cl. 333-165.000.
Bergey, James L.: *See*—
Sulkowski, Theodore S.; Bergey, James L.; and Mascitti, Albert A., 4,365,063, Cl. 546-123.000.
Bergland, William J.: *See*—
Nelms, George E.; Barthel, Thomas C.; and Bergland, William J., 4,365,290, Cl. 364-200.000.
Bergman, Helmut. Extended space enclosing structure. 4,364,207, Cl. 52-81.000.
Berman, Richard M.; and Feldgus, Ernest B., to Delta Scan, Inc. Method for producing images on radiation sensitive recording mediums. 4,365,275, Cl. 358-283.000.
Bernard, Herve; and Viguie, Jean-Claude, to Commissariat a l'Energie Atomique. Process for preparing pieces composed of solid electrolyte based on stabilized zircon and to pieces obtained by this process. 4,365,011, Cl. 429-193.000.
Bernardi, Carl E., to National Semiconductor Corporation. Automatic self-adjusting processing apparatus. 4,364,977, Cl. 427-429.000.
Berne, Robert M.; Belardinelli, Luiz; and Rubio, Rafael, to University of Virginia Alumni Patents Foundation. Adenosine antagonists in the treatment and diagnosis of A-V node conduction disturbances. 4,364,922, Cl. 424-9.000.
Bersin, Richard L.; and Clouser, William H., to Perkin-Elmer Corporation, The. Molar gas-flow controller. 4,364,413, Cl. 137-624.200.
Besemann, Alfred, to E.C.H. Will (GmbH & Co.). Method and apparatus for forming a stream of partially overlapping paper sheets or the like. 4,364,552, Cl. 271-182.000.
Beta, B.V.: *See*—
Keller, George D., 4,365,125, Cl. 200-81.90M.
Bette, Willi: *See*—
Cirkel, Hans-Jurgen; and Bette, Willi, 4,365,337, Cl. 372-87.000.
Beun, Jacobus H.; and van Duijn, Jan, to Internationale Octrooi Maatschappij "Octropa" BV. Disposable pump for dispensing small metered amounts of liquid from a container and a control unit for operating said pump. 4,364,718, Cl. 417-500.000.
Beynie, Claude P.: *See*—
Bargeton, Gilbert L.; and Beynie, Claude P., 4,365,247, Cl. 340-825.010.
Bargeton, Gilbert L.; and Beynie, Claude P., 4,365,248, Cl. 340-825.010.
Biba, Kenneth J.; and Picazo, Jose J., Jr., to Sytek Corporation. Multiple channel data communication system. 4,365,331, Cl. 370-124.000.
Bicro, Incorporated: *See*—
Crosetti, Stephen M.; and Crosetti, Michael A., 4,365,280, Cl. 360-137.000.

Biedermann, Ernst; and Rapp, Heinz, to Agfa-Gevaert AG. Apparatus for removing particles of dust from the surfaces of flat objects. 4,364,147, Cl. 15-404.000.

Bien, Alfred A., to Chrysler Corporation. Eyelet trim strip fastening arrangement. 4,364,591, Cl. 293-102.000.

Biesanz, Charles W., Sr., to Tru-Split Tool Company. Composite building panel. 4,364,213, Cl. 52-309.170.

Bigham, Keith E. Method and device for injecting a bolus of material into a body. 4,364,376, Cl. 128-1.100.

Bimpson, Malcolm: *See—*
Haughton, Geoffrey J. S.; and Bimpson, Malcolm, 4,364,734, Cl. 441-37.000.

Bindra, Jasjit S.; Eggler, James F.; Johnson, Michael R.; and Schaaf, Thomas K., to Pfizer Inc. 11-Desoxy-16-aryloxy-ω-tetranorprostaglandins. 4,365,077, Cl. 560-53.000.

Binns, Lloyd S., to SPS Technologies, Inc. Blind fastener assembly. 4,364,697, Cl. 411-38.000.

Birt, David E., to EMI Limited. Record matrix preparation. 4,364,816, Cl. 204-297.00W.

Bison-Werke, Bahre & Greten GmbH & Co., KG: *See—*
Wentworth, Irvin, 4,364,984, Cl. 428-106.000.

Bittings, Gilbert S., to Becton, Dickinson and Company. Contamination-free separation device. 4,364,903, Cl. 422-101.000.

Bitvai, Tivadar. Anchoring base for road sign posts and the like. 4,364,688, Cl. 404-10.000.

Bitzer, Diethelm; Kramis, Jost; and Ackermann, Jakob, to SIA, Schweizer Schmirgel- u. Schlief-Industrie AG. Abrasive material. 4,364,746, Cl. 51-298.000.

Bixler, Richard M.: *See—*
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,365,295, Cl. 364-200.000.

Bjorlund, John. Reflection device for roadside marking. 4,364,634, Cl. 350-97.000.

Black, David J., to James W. Gardner Enterprises, Inc. Neutral flavored high stability peanut paste chocolate mix. 4,364,967, Cl. 426-632.000.

Blackshear, Perry L., Jr., to University of Minnesota, The Regents of the. System for regenerative thermally reversed adsorption. 4,364,747, Cl. 55-25.000.

Blahak, Johannes: *See—*
Muller, Hanns P.; Wagner, Kuno; Blahak, Johannes; and Menk, Hermann, 4,365,000, Cl. 428-423.900.

Blais, Marcel: *See—*
Baumann, Robert P.; Blais, Marcel; and Spiess, Irwin, 4,365,059, Cl. 536-35.000.

Blakelock, Wallace J., to Baker Perkins Holdings Limited. Apparatus for handling biscuits. 4,364,467, Cl. 198-486.000.

Blanchette, Jon A., to General Motors Corporation. Exhaust gas recirculation control assembly. 4,364,368, Cl. 123-568.000.

Blanken, Jacob, to U.S. Philips Corporation. Method of providing a metal component with a thermally black surface. 4,364,780, Cl. 148-6.000.

Blaszkiewicz, Peter: *See—*
Speck, Ulrich; Blaszkiewicz, Peter; Seidelmann, Dieter; and Klieger, Erich, 4,364,921, Cl. 424-5.000.

Blegen, James R., to Ashland Oil, Inc. Vapor permeation curable polyester resin coating compositions for flexible substrates. 4,365,039, Cl. 524-773.000.

Bletso, Nelson C.: *See—*
Pesata, Patrick J., Jr.; Frerking, Harlan W., Jr.; and Bletso, Nelson C., 4,365,046, Cl. 525-438.000.

Bleuel, Walter, to VDO Adolf Schindling AG. Electric clock, particularly a quartz clock. 4,364,673, Cl. 368-316.000.

Blom, Hendrik, to U.S. Philips Corporation. Television camera having a beam current control circuit. 4,365,271, Cl. 358-219.000.

Bloodworth, Lonnie B., Jr.; Scholly, Christian; and Williford, Thomas L., Jr., to Western Electric Company, Inc. Method of forming a fiber ribbon cable unit. 4,364,788, Cl. 156-179.000.

Bluzer, Nathan; Jensen, Arthur S.; Schroder, Dieter K.; and Malmberg, Paul R., to Westinghouse Electric Corp. Method of making a sloped insulator charge-coupled device. 4,364,164, Cl. 29-571.000.

BMI, Inc.: *See—*
Costa, Richard A., 4,364,798, Cl. 202-267.00R.

Board of Regents, The University of Texas System: *See—*
Norling, Barry K.; and Bugg, James L., Jr., 4,364,731, Cl. 433-218.000.

Bochert, Hubertus, to Durkoppwerke GmbH. Fabric top feeder for a sewing machine. 4,364,321, Cl. 112-311.000.

Boeing Company, The: *See—*
Daniel, James A.; and Pinson, George T., 4,364,272, Cl. 73-432.00R.
Pompei, Arturu; Raymond, John M.; and Sherotsky, George D., 4,364,533, Cl. 244-129.300.
Warner, Gary J., 4,364,324, Cl. 114-280.000.

Bogaert, Jean-Pierre, to Bonyf AG. Outfit for repair of split dental prosthesis. 4,364,473, Cl. 206-63.500.

Boger, Manfred: *See—*
Drabek, Jozef; and Boger, Manfred, 4,364,959, Cl. 424-298.000.

Bogushev, Zimel A.: *See—*
Gorbatov, Vasily M.; Spirin, Evgeny T.; Shakhov, Vladimir V.; Vagin, Viktor V.; Khromov, Vyacheslav I.; Bogushev, Zimel A.; Eremin, Viktor I.; Vainzof, Kaletta M.; and Podkhvatilin, Evgeny R., 4,364,309, Cl. 99-352.000.

Bohlin, Jan O. Method and device for establishing a flow connection with a pipe. 4,364,406, Cl. 137-15.000.

Boileau, Sylvie L.; N'Guyen, Thanh-Dung; and Gautier, Jean-Claude C., to Societe Nationale des Poudres et Explosifs. Process for the synthesis of tertiary phosphine oxides, and new tertiary phosphine oxides. 4,365,094, Cl. 568-14.000.

Bolding, Richard D. Wave actuated gas compression apparatus. 4,364,715, Cl. 417-100.000.

Boller, Arthur; Germann, Alfred; Schadt, Martin; and Villiger, Alois, to Hoffmann-La Roche Inc. Liquid crystal mixtures. 4,364,838, Cl. 252-299.610.

Bollero, Adriano; Carpinello, Bruno; Galliano, Giuseppe; and Pomponi, Roberto, to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A. Overvoltage-pulse analyzer. 4,365,193, Cl. 324-102.000.

Bolton, Nelson P.: *See—*
Smith, W. Novis, Jr.; and Bolton, Nelson P., 4,364,786, Cl. 156-99.000.

Bonavita, Frank: *See—*
Johanson, Lars; Haft, Phil; Bonavita, Frank; Feldstein, George; Greenberg, Steve; and Brady, Kevin, 4,365,300, Cl. 364-474.000.

Bondiguet, Regis: *See—*
Gautier, Guy; and Bondiguet, Regis, 4,364,573, Cl. 277-153.000.

Bonyf AG: *See—*
Bogaert, Jean-Pierre, 4,364,473, Cl. 206-63.500.

Borg-Warner Corporation: *See—*
Cooper, Kenneth W.; and Shaffer, Jacob E., Jr., 4,364,237, Cl. 62-160.000.
Halpern, Yuval; and Mott, Donna M., 4,365,033, Cl. 524-118.000.

Boring, Earl: *See—*
Moss, Theron C.; Mullan, Richard; Boring, Earl; Hjellum, Jerry; and Christison, Alexander, 4,364,144, Cl. 15-229.0AC.

Borowski, Edward: *See—*
Falkowski, Leonard S.; Stefanska, Barbara J.; Troka, Elzbieta; Golik, Jerzy J.; and Borowski, Edward, 4,365,058, Cl. 536-6.500.

Bott, John A. Vehicle luggage carrier. 4,364,500, Cl. 224-325.000.

Boulanger, Henry J.: *See—*
Olsen, Donald A.; and Boulanger, Henry J., 4,365,225, Cl. 337-88.000.

Bouteille, Daniel; Marguet, Hugues; and Petrimaux, Eric, to La Telemecanique Electrique. Pneumatic phase module locking device. 4,364,414, Cl. 137-624.140.

Bowden, Charles J.: *See—*
Janvrin, Robert B.; and Bowden, Charles J., 4,364,621, Cl. 339-59.00M.

Bowdjtch, Philip N., to Charles Stark Draper Laboratory, Inc., The. Passive controlled buoyancy apparatus. 4,364,325, Cl. 114-331.000.

Bowerman, Leonard E., to Electrolux Corporation. Quick cleanout for upright vacuum cleaner. 4,364,146, Cl. 15-323.000.

Bowman, Christopher J.: *See—*
Rosen, Jonathan J.; Acosta, George M.; and Bowman, Christopher J., 4,364,126, Cl. 3-1.500.

Brabets, Robert I.: *See—*
Massey, Lester G.; Brabets, Robert I.; and Abel, William A., 4,364,740, Cl. 44-1.00C.

Brady, Kevin: *See—*
Johanson, Lars; Haft, Phil; Bonavita, Frank; Feldstein, George; Greenberg, Steve; and Brady, Kevin, 4,365,300, Cl. 364-474.000.

Brady, Michael B. C.; and Goddard, Michael L., to English Electric Valve Company Limited. Magnetron having three alternatingly connected straps. 4,365,185, Cl. 315-39.690.

Brainard, John P., to United States of America, Energy. Overvoltage protector using varistor initiated arc. 4,365,282, Cl. 361-127.000.

Branden, Leif: *See—*
Lindman, Borje L.; and Branden, Leif, 4,365,118, Cl. 179-159.000.

Brandes, Wilhelm: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,364,955, Cl. 424-269.000.

Brandt, Lennart H.; Hultmark, Ingvar O.; Petersson, Lars H.; and Soderbaum, Carl U., to AB Volvo Penta. Folding boat propeller. 4,364,711, Cl. 416-142.000.

Brandt, Reinhard: *See—*
Gliem, Ralf; and Brandt, Reinhard, 4,364,792, Cl. 156-628.000.

Branscheid, Werner: *See—*
Schippers, Heinz; Branscheid, Werner; Lenk, Erich; and Hardt, Udo, 4,364,717, Cl. 417-407.000.

Brazzola, Luigi, to Elioform AG. Heat-absorbent panel for solar energy and sloping roof composed of such panels. 4,364,374, Cl. 126-442.000.

Breault, Richard D.: *See—*
DeCasperis, Anthony J.; Roethlein, Richard J.; and Breault, Richard D., 4,365,008, Cl. 429-36.000.

Breckenridge, George J., Jr.: *See—*
Kalnin, Ilmar L.; Breckenridge, George J., Jr.; DiEdwardo, Andrew H.; and Rhodes, John M., 4,364,916, Cl. 423-447.600.

Bremer, Noel J.; Dria, Dennis E.; and Weber, Andrew M., to Standard Oil Company, The. Use of improved mixed vanadium phosphorus oxide catalyst in oxidation processes. 4,365,069, Cl. 549-260.000.

Bremmer, Bart J.; and Reierson, Robert L., to Dow Chemical Company, The. Derivatives of cyano-substituted ketones and aldehydes. 4,365,073, Cl. 549-451.000.

Brent, Albert: *See—*
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,364,744, Cl. 48-86.00R.

Bret, Antoine: *See—*
Aubert, Michel; and Bret, Antoine, 4,364,899, Cl. 376-264.000.

Bridgeman, Bruce B. Coat hanger. 4,364,496, Cl. 223-88.000.

Bright, William L. Secondary power pedestal for electrical equipment. 4,365,108, Cl. 174-50.000.

Bristol-Myers Company: *See—*
Ricci, Albert A., 4,364,481, Cl. 211-184.000.

British-American Tobacco Company Limited: *See—*
Horsewell, Henry G.; and Luke, John A., 4,364,403, Cl. 131-332.000.

Broadhurst, Richard C., to Johnson, Matthey & Co., Limited. Method of making an electrical contact. 4,364,173, Cl. 29-882.000.

Brontman, Rostislav L.: *See—*
Tarasov, Nikolai M.; Varukha, Nikolai A.; Brontman, Rostislav L.; Slesarev, Boris A.; Zhukov, Anatoly M.; Mizik, Valery V.; Rogachev, Evgeny P.; and Gurnov, Nikolai I., 4,365,137, Cl. 219-137.310.

Brooks, Albert A.; Henis, Jay M. S.; and Tripodi, Mary K., to Monsanto Company. Methods for preparing anisotropic hollow fiber membranes comprising polymer of acrylonitrile and styrene and hollow fiber membranes produced therefrom. 4,364,759, Cl. 55-487.000.

Brown, David J.; and Reid, Michael, to Lucas Industries Limited. Method of producing a nickel electrode. 4,364,422, Cl. 141-1.100.

Brown, Fred A.: *See—*
McDaniel, Wharton; Brown, Fred A.; and Thompson, Donald, 4,365,187, Cl. 318-254.000.

BRS, Inc.: *See—*
Yonkers, Ronald C., 4,364,190, Cl. 36-32.00R.

Brucher, Walter; Hense, Karl H.; and Modtler, Reiner, to Akzona Incorporated. Multifilament yarn of individual filaments of the multicomponent matrix/segment type which has been falsetwisted, a component thereof shrunk, a component thereof heatset; fabrics comprising said. 4,364,983, Cl. 428-85.000.

Brundidge, Larry G. Vehicular seat belt apparatus (LITE-A-BELT). 4,365,285, Cl. 362-32.000.

Brunelle, Rene J., to Kidde, Inc. Aircraft seat. 4,364,604, Cl. 297-163.000.

Bruno, Gerald R., to Progressive Machine Company, Inc. Tension take-up and speed control. 4,364,527, Cl. 242-75.510.

Bruns, Theodor, to Maschinenfabrik Klaus-Gerd Hoes. Methods of setting roadmaking material and smoothing screeds for performing such methods. 4,364,690, Cl. 404-118.000.

Brunswick Mining and Smelting Corporation Limited: *See—*
Drysdale, Alcide, 4,364,539, Cl. 248-647.000.

Buchanan, Archibald, to B.P.B. Industries Limited. Filling valve for a bag or other container. 4,364,510, Cl. 229-62.500.

Buchel, Karl H.: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,364,955, Cl. 424-269.000.

Buck, Carl J.: *See—*
Gander, Robert J.; Buck, Carl J.; and Sipos, Tibor, 4,364,924, Cl. 424-49.000.

Buck, Wolfgang: *See—*
Sehring, Richard; and Buck, Wolfgang, 4,364,875, Cl. 260-465.00E.

Budai, Zsuzsanna: *See—*
Szejtli, Jozsef; Budai, Zsuzsanna; Pap nee Imrenyi, Gabriella; and Kerekes, Andras, 4,365,061, Cl. 536-103.000.

Buergin, Rodney G.: *See—*
Pearson, Robert J.; and Buergin, Rodney G., 4,364,212, Cl. 52-281.000.

Buetemeister, Earl H., to General Motors Corporation. Internal combustion engine with initial ignition suppression during cranking. 4,364,344, Cl. 123-179.0BG.

Bugg, James L., Jr.: *See—*
Norling, Barry K.; and Bugg, James L., Jr., 4,364,731, Cl. 433-218.000.

Bulk Lift International, Inc.: *See—*
Nattrass, Peter J., 4,364,424, Cl. 150-1.000.

Burleson, Robert R.: *See—*
Arnold, Jones B.; Burleson, Robert R.; and Pardue, Robert M., 4,365,301, Cl. 364-475.000.

Burns, Donald L.; Harbour, John M.; and Lister, James J., to Kalamazoo Conveyor Company. Chip conveyor. 4,364,831, Cl. 210-298.000.

Burr-Brown Research Corp.: *See—*
Godsey, Ernest E., 4,364,618, Cl. 339-17.0LC.

Burrill, Kenneth A., to Canada, Atomic Energy of, Limited. Deposit suppression in the core of water-cooled nuclear reactors. 4,364,900, Cl. 376-306.000.

Burroughs Corporation: *See—*
Barnes, George H.; Lundstrom, Stephen F.; and Shafer, Philip E., 4,365,292, Cl. 364-200.000.
Fasig, Harold A.; and Horak, Anthony, 4,365,151, Cl. 250-222.00R.

Burroughs Wellcome Co.: *See—*
Sankoorikal, Varghese L.; and Holmes, Keith D., Jr., 4,364,263, Cl. 73-61.10C.

Buschulte, Winfried, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Blue-flame oil burner. 4,364,725, Cl. 431-116.000.

Byckling, Eero, to H. & P. Kaas System Teknik ApS. Method for accurate control of a light beam in phototypesetting and other applications. 4,365,256, Cl. 346-108.000.

Byrd, James L., to Stolle Corporation, The. Controlled oriented discharge of cups from a blanking and forming press. 4,364,255, Cl. 72-345.000.

Byrd, Norman R.; and Peek, Daniel C., to McDonnell Douglas Corporation. Fire resistant compositions and composites. 4,364,991, Cl. 428-265.000.

C-I-L Inc.: *See—*
Tiedemann, Herman H.; Thibault, Gilbert; and Laberge, Joseph G. J., 4,364,917, Cl. 423-474.000.

C. L. Frost & Son, Inc.: *See—*
Weis, Siegfried K.; and Truszkowski, Donald T., 4,364,614, Cl. 308-187.100.

Cactus Technology Corp.: *See—*
Heckrotte, John R., Sr., 4,364,287, Cl. 76-101.00D.

Cadre Corporation, The: *See—*
Fresch, Haase D., 4,364,729, Cl. 432-9.000.

Caffy, Russell B.; Carron, Mark S.; Hull, Robert W.; Jain, Pawan K.; and Mickley, Harold S., to Stauffer Chemical Company. Method for treating the residue from the production of phosphorochloridothionates. 4,364,911, Cl. 423-317.000.

Calhoon, Kelly L.: *See—*
Johnson, William M.; and Calhoon, Kelly L., 4,364,199, Cl. 49-181.000.

California Institute of Technology: *See—*
Kyriakides, Stelios; and Babcock, Charles D., 4,364,692, Cl. 405-168.000.

Callander, Douglas D.: *See—*
Massey, Fred L.; and Callander, Douglas D., 4,365,031, Cl. 524-88.000.

Cameron Iron Works, Inc.: *See—*
Fisher, Edmund A.; and Platou, John S., 4,364,433, Cl. 166-339.000.

Campbell, James. Vertical-axis windmill of the Chinese type. 4,364,710, Cl. 416-142.000.

Campbell, James R.; and Anspach, Roy L., to Mahoney, Thomas P.; and Ruston, Donald A. Metallic core panel and method of making same. 4,365,004, Cl. 428-593.000.

Canada, Atomic Energy of, Limited: *See—*
Burrill, Kenneth A., 4,364,900, Cl. 376-306.000.

Canadian Fine Color Company, Limited: *See—*
Koncz, Attila P., 4,364,750, Cl. 55-89.000.

Canadian Fram: *See—*
Charles, Herbert N., 4,364,712, Cl. 416-183.000.

Canadian General Electric Company Limited: *See—*
Niemann, Roy A., 4,364,171, Cl. 29-828.000.

Canon Denshi Kabushiki Kaisha: *See—*
Senuma, Michio; Shimada, Fumio; Shigeta, Yoshihiro; Saito, Syuichiro; Aizawa, Hiroshi; Ohniwa, Takehiko; and Canon Denshi Kabushiki Kaisha, 4,364,654, Cl. 354-234.000.

Canon Kabushiki Kaisha: *See—*
Ikemori, Keiji, 4,364,644, Cl. 350-464.000.
Kawamura, Masaharu; Sakurada, Nobuaki; Shinoda, Nobuhiko; Ito, Tadashi; Ito, Fumio; and Murakami, Hiroyashu, 4,364,647, Cl. 354-23.00D.
Kitajima, Nobuo; Ishihara, Shunichi; Nishigaki, Yuji; and Kitahara, Nobuko, 4,365,015, Cl. 430-62.000.
Mamiya, Toshiharu; Yamada, Tateo; Hirohata, Michio; Ogawa, Yukio; and Kimura, Hiroyuki, 4,364,649, Cl. 354-25.000.
Momiyama, Kikuo, 4,364,643, Cl. 350-464.000.
Murai, Keiichi; Tanaka, Naoto; and Kondo, Hideyo, 4,364,329, Cl. 118-652.000.
Senuma, Michio; Shimada, Fumio; Shigeta, Yoshihiro; Saito, Syuichiro; Aizawa, Hiroshi; Ohniwa, Takehiko; and Canon Denshi Kabushiki Kaisha, 4,364,654, Cl. 354-234.000.
Seto, Susumu; Tokuhara, Mitsuhiro; Takemura, Yukio; Yamada, Yu; and Kuwayama, Takeshi, 4,364,658, Cl. 355-8.000.
Tanaka, Kazuo; and Hirose, Ryusho, 4,364,642, Cl. 350-429.000.

Carbonnel, Henri, to NOVATOME. Electromagnetic conduction-pump for liquid metal. 4,364,713, Cl. 417-50.000.

Carl Freudenberg, Firma: *See—*
de Riz, Erich; and Ringel, Wolfgang, 4,364,125, Cl. 2-255.000.

Carl Zeiss-Stiftung: *See—*
Lang, Walter H.; and Muchel, Franz, 4,364,629, Cl. 350-516.000.

Carlson, David H. J., to UOP Inc. Catalytic composite, method of manufacture, and process for use. 4,364,843, Cl. 252-430.000.

Carpinello, Bruno: *See—*
Bollero, Adriano; Carpinello, Bruno; Galliano, Giuseppe; and Pomponi, Roberto, 4,365,193, Cl. 324-102.000.

Carr-Griff: *See—*
Robe, John K.; and Keranen, Robert M., 4,365,288, Cl. 363-141.000.

Carron, Mark S.: *See—*
Caffy, Russell B.; Carron, Mark S.; Hull, Robert W.; Jain, Pawan K.; and Mickley, Harold S., 4,364,911, Cl. 423-317.000.

Carter, Harry V.: *See—*
Hannah, Robert W.; Coates, John P.; Savitzky, Abraham; Ford, Michael A.; and Carter, Harry V., 4,365,303, Cl. 364-498.000.

Casals-Stenzel, Jorge: *See—*
Skuballa, Werner; Vorbruggen, Helmut; Raduchel, Bernd; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,364,950, Cl. 424-263.000.

Casper S.p.A.: *See—*
Taddei, Franco, 4,364,612, Cl. 308-5.00R.

Cassagnes, Andre J.; and Dudley, Irving C., to Hasbro Industries, Inc., a part interest. Drawing appliance. 4,364,176, Cl. 33-18.00R.

Castillo, Carmen; and Hayes, John C., to UOP Inc. Passivation of metal contaminants on cracking catalyst. 4,364,848, Cl. 252-417.000.

Castoe, John H. Camber adjustment adapter. 4,364,288, Cl. 81-3.00R.

Caterpillar Tractor Co.: *See—*
Asal, Jerrold R., 4,364,439, Cl. 172-821.000.
Gardner, Chester S.; and Streight, William E., 4,364,663, Cl. 356-371.000.

Cathedyne Corporation: *See—*
Schjeldahl, Gilmore T., 4,364,716, Cl. 417-394.000.

Cawm-Crete International Limited: *See*—
Goodwin, Walter A., 4,364,987, Cl. 428-192.000.
Cazes, Lyle C. Piling rake. 4,364,191, Cl. 37-2.00R.
Cech, Jerry E. Syringe dispensing apparatus. 4,364,388, Cl. 128-234.000.
CEDA S.p.A.: *See*—
Vedova, Ferruccio D., 4,365,165, Cl. 250-577.000.
Celamerck GmbH & Co. KG: *See*—
Sehring, Richard; and Buck, Wolfgang, 4,364,875, Cl. 260-465.00E.
Celanese Corporation: *See*—
Edelman, Robert; McMahon, Paul E.; and Daumit, Gene P., 4,364,993, Cl. 428-288.000.
Kalnin, Ilmar L.; Breckenridge, George J., Jr.; DiEdwardo, Andrew H.; and Rhodes, John M., 4,364,916, Cl. 423-447.600.
Celotex Corporation, The: *See*—
Frentzel, Richard L., 4,365,024, Cl. 521-114.000.
Johnson, William M.; and Calhoon, Kelly L., 4,364,199, Cl. 49-181.000.
Centra-Burkle GmbH & Co.: *See*—
Weimer, Gunther; and Becker, Henning, 4,365,167, Cl. 307-66.000.
Centro Ricerche Fiat S.p.A.: *See*—
Re Fiorentin, Stefano, 4,364,264, Cl. 73-105.000.
Century 21 Pollution Control, Inc.: *See*—
Diachuk, Wolodymyr, 4,364,754, Cl. 55-269.000.
Ceres Electronics Corporation: *See*—
Ashman, Leland E., 4,364,677, Cl. 374-44.000.
Chabat-Courrede, Jean; and Gemignani, Francois. Isolating device for calibrated safety valve. 4,364,541, Cl. 251-83.000.
Chang, Kuo Y.; and Gatling, Sterling C., to Dow Chemical Company, The. Process for the preparation of bis(1-phenylethenyl) compounds. 4,365,103, Cl. 585-320.000.
Chang, Pei K., to Nutrisearch Company. Blends of egg albumen and whey protein having improved gel strength. 4,364,966, Cl. 426-573.000.
Chapelle, Jules A.; Levacher, Jean-Pierre; Sanzey, Emile; and Vironneau, Pierre, to Electricite de France (Service National). Hot water supply apparatus comprising a thermodynamic circuit. 4,364,239, Cl. 62-235.100.
Chapman, Ronald H.: *See*—
Hansen, Kenneth A.; and Chapman, Ronald H., 4,365,213, Cl. 331-113.00R.
Chaput, Guy J.; and Sich, Edward M., to Northern Telecom Limited. Electrical circuit on porcelain coated metal substrates. 4,365,168, Cl. 307-115.000.
Charles, Herbert N., to Canadian Fram. Cross flow cooling fan. 4,364,712, Cl. 416-183.000.
Charles Stark Draper Laboratory, Inc., The: *See*—
Bowditch, Philip N., 4,364,325, Cl. 114-331.000.
Chatterjee, Pallab K.; and Tasch, Aloysious F., Jr., to Texas Instruments Incorporated. Co-planar barrier-type charge coupled device with enhanced storage capacity and decreased leakage current. 4,365,261, Cl. 357-24.000.
Chatterjee, Shyam S.: *See*—
Klessing, Klaus; and Chatterjee, Shyam S., 4,364,953, Cl. 424-266.000.
Cheh, Albert M., to University of Minnesota, Regents of the. Sulfite destruction of direct acting mutagens in drinking water. 4,364,835, Cl. 210-752.000.
Chem-Lawn Corporation: *See*—
Rhoades, Edward J.; Rosenberger, Edwin C.; and Waker, Jerome A., 4,364,516, Cl. 239-74.000.
Chemed Corporation: *See*—
Goldsmith, Herbert, 4,365,200, Cl. 324-449.000.
Chemische Werke Huls AG: *See*—
Sunder-Plassmann, Paul, 4,365,056, Cl. 528-403.000.
Chemische Werke Huls A.G.: *See*—
Muller, Wolfgang H. E.; and Hofmann, Peter, 4,364,869, Cl. 260-410.90R.
Chen, Francis H.; Feldmaier, Douglas A.; and Hamburg, James A., to General Motors Corporation. Engine with knock sensing apparatus having multiple frequency tuning. 4,364,260, Cl. 73-35.000.
Chevron Research Company: *See*—
Bakshi, Kiran R., 4,364,748, Cl. 55-27.000.
Santilli, Donald S., 4,364,857, Cl. 252-455.00R.
Chi, Uli H.; and Lembersky, Mark R., to Weyerhaeuser Company. Simulated interactive dividing and allocating process. 4,364,732, Cl. 434-219.000.
Child, Edward T.: *See*—
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,364,744, Cl. 48-86.00R.
Chimiques Ugine Kuhlmann: *See*—
Strassel, Albert, 4,364,886, Cl. 264-171.000.
CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See*—
Gado, Istvan; Jekkel nee Bokany, Antonia; Szvoboda, Gyorgy; Jarai, Miklos; Piukovich, Sandor; and Istvan, Sandor, 4,365,020, Cl. 435-80.000.
Szejtli, Jozsef; Budai, Zsuzsanna; Pap nee Imrenyi, Gabriella; and Kerekes, Andras, 4,365,061, Cl. 536-103.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See*—
Seres, Jeno; Varkonyi nee Schlavicsko, Erika; Virag, Sandor; and Kulcsar, Gabor, 4,364,958, Cl. 424-274.000.
Takacs, Kalman; Kiss nee Ajzert, Ilona; Simay, Antal; Literati Nagy, Peter; Hetyey nee Papp, Maria; Ecsery nee Puskas, Marian; Szekeres, Laszlo; Papp, Gyula; Viragh, Sandor; and Udvardy, Eva, 4,365,064, Cl. 546-148.000.
Cho-Jirushi Plastics Industry Co., Ltd.: *See*—
Ohno, Mutsuyuki, 4,364,480, Cl. 211-85.000.
Chopping, Geoffrey; Moberly, Robert V.; and Philip, Alexander S., to Plessey Company plc, The. Channel zero switching arrangements for digital telecommunication exchanges. 4,365,330, Cl. 370-100.000.
Chow, Peter C. M., to Grove Valve and Regulator Company. Bi-directional flow control system. 4,364,410, Cl. 137-489.000.
Christensen, David A., to North American Philips Corporation. Vented membrane switch with contaminant scavenger. 4,365,130, Cl. 200-306.000.
Christensen, Thorkild: *See*—
Thomsen, Svend E.; and Christensen, Thorkild, 4,364,302, Cl. 91-29.000.
Christiansen, Preben: *See*—
Andersen, Hans S.; and Christiansen, Preben, 4,364,304, Cl. 91-420.000.
Christison, Alexander: *See*—
Moss, Theron C.; Mullan, Richard; Boring, Earl; Hjellum, Jerry; and Christison, Alexander, 4,364,144, Cl. 15-229.0AC.
Chrysler Corporation: *See*—
Bien, Alfred A., 4,364,591, Cl. 293-102.000.
Chubb, Arthur B.; and Rhoades, James J., to Tapco Products Company, Inc. Combined sheet bending brake, table and coil support. 4,364,254, Cl. 72-319.000.
Chung, Daniel A.; and Lawrence, John P., to Goodyear Tire & Rubber Company, The. Polyurethane prepared from diamine and prepolymer. 4,365,051, Cl. 528-64.000.
Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., to Bell Telephone Laboratories, Incorporated. Automatically adjustable bidirectional-to-unidirectional transmission network. 4,365,119, Cl. 179-170.200.
Ciba-Geigy Corporation: *See*—
Beffa, Fabio; Back, Gerhard; and Schutz, Hans U., 4,364,864, Cl. 260-145.00B.
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,365,068, Cl. 548-435.000.
Drabek, Jozef; and Boger, Manfred, 4,364,959, Cl. 424-298.000.
Ernest, Ivan; Gosteli, Jacques; and Woodward, Robert B., 4,364,865, Cl. 260-239.00A.
Fringeli, Werner, 4,364,845, Cl. 252-301.220.
Lohmann, Dieter; and Wyler, Siegfried, 4,364,808, Cl. 204-158.00R.
Muntwyler, Rene; and Menasse, Raphael, 4,364,949, Cl. 424-263.000.
Pissiotas, Georg; Rohr, Otto; and Kristinsson, Haukur, 4,364,769, Cl. 71-90.000.
Zink, Rudolf; and Loew, Peter, 4,364,738, Cl. 8-634.000.
Ciolli, Donald A., to Rotor Tool Company, The. Bi-directional speed reducing mechanism. 4,364,286, Cl. 74-768.000.
Cir S.p.A. Divisione Sasib: *See*—
Manservisi, Renato; and Zullo, Antonio, 4,364,464, Cl. 198-419.000.
Cirkel, Hans-Jurgen; and Bette, Willi, to Kraftwerk Union Aktiengesellschaft. Excitation system for a fast pulsed discharge. 4,365,337, Cl. 372-87.000.
Citron, Paul; Hepp, Dennis G.; and Jirak, Thomas L., to Medtronic, Inc. Apparatus for monitoring the rhythm of a patient's heartbeat. 4,364,397, Cl. 128-710.000.
Clar, Milton. Hand held rotary impact tool. 4,364,440, Cl. 173-93.700.
Clarion Co., Ltd.: *See*—
Minagawa, Shoichi; Okamoto, Takeshi; and Sakai, Takamasa, 4,365,216, Cl. 333-153.000.
Clark, Barry P.; Ross, William J.; and Todd, Alec, to Lilly Industries Limited. 5-Substituted pyranone compounds and their use as pharmaceuticals to treat an immediate hypersensitivity condition. 4,364,956, Cl. 424-269.000.
Clark, George C.: *See*—
McRae, Daniel D.; Clark, George C.; and Szuchy, Nicholas C., 4,365,338, Cl. 375-12.000.
Clark, Keith E.: *See*—
Ripley-Lotee, Michael J.; Dillinger, Robert B.; and Clark, Keith E., 4,364,530, Cl. 244-3.220.
Clark, Samuel K., Sr. Assembly for poison baiting rodents. 4,364,194, Cl. 43-131.000.
Clarke, John P.; and Schumacher, Ernest W., to Virginia Chemicals Inc. Refrigerant suction line filter/filter-drier and method for the construction thereof. 4,364,756, Cl. 55-316.000.
Clement, Rene; and Gugliermotte, Francis, to Societe Europeenne des Ceramiques A lumineuses "EUROCERAL". Process for producing fritted alumina members. 4,364,877, Cl. 264-1.200.
Clements, Jack T.; and Mace, Robert E., to Standard Havens, Inc. Self tensioning cap for bag filters. 4,364,758, Cl. 55-365.000.
Clerk, Robert C. Liquid reservoir. 4,364,131, Cl. 4-495.000.
Clouser, William H.: *See*—
Bersin, Richard L.; and Clouser, William H., 4,364,413, Cl. 137-624.200.
CNG Research Company: *See*—
Massey, Lester G.; Brabets, Robert I.; and Abel, William A., 4,364,740, Cl. 44-1.00C.
Coan, Michael H.: *See*—
Mitra, Gautam; Coan, Michael H.; and Wada, Shohachi, 4,364,861, Cl. 260-112.00B.
Coates, John P.: *See*—
Hannah, Robert W.; Coates, John P.; Savitzky, Abraham; Ford, Michael A.; and Carter, Harry V., 4,365,303, Cl. 364-498.000.
Cobb, Carl W. E., to Kettering Medical Center. Automatically operable automotive vehicle gate apparatus provided with self protection and automotive protection. 4,364,200, Cl. 49-192.000.

Coflexip: *See—*
Genini, Maurice; Athe, Christian; and Aubert, Jean-Paul, 4,364,418, Cl. 138-103.000.
Cohen, Leslie J.: *See—*
Reizer, Robert F.; Koivu, Albert H.; and Cohen, Leslie J., 4,365,029, Cl. 523-437.000.
Cole, Albert V.: *See—*
Kraft, George R.; Cole, Albert V.; and Kimbrel, Henry E., 4,364,465, Cl. 198-452.000.
Colmenero, Gustavo T. Display module for traveling pattern signs. 4,365,245, Cl. 340-792.000.
Colpaert, James J., to Bendix Corporation, The. Drum brake having duo mode. 4,364,456, Cl. 188-106.00A.
Commissariat a l'Energie Atomique: *See—*
Aubert, Michel; and Bret, Antoine, 4,364,899, Cl. 376-264.000.
Bernard, Herve; and Viguie, Jean-Claude, 4,365,011, Cl. 429-193.000.
Feutrel, Claude, 4,364,901, Cl. 376-438.000.
Feutrel, Claude, 4,364,902, Cl. 376-441.000.
Communications Satellite Corporation: *See—*
Lee, Lin-Nan; and Lu, Shyue-Ching, 4,365,110, Cl. 178-22.100.
Stegens, Ronald E., 4,365,195, Cl. 324-158.00F.
Compagnie Generale de Geophysique: *See—*
Beauducel, Claude; and Cretin, Jacques, 4,365,320, Cl. 367-21.000.
Compagnie Generale des Etablissments Michelin: *See—*
Lefrancois, Jean, 4,364,427, Cl. 152-349.000.
Compagnie Internationale Pour l'Informatique CII-Honeywell Bull: *See—*
Gernelle, Francois, 4,364,681, Cl. 400-322.000.
Compagnie Miniere de l'Ogooue COMILOG: *See—*
Gaudet, Henri, 4,364,314, Cl. 104-225.000.
Componentes Electronicos, S.A.: *See—*
Schmidt, Hans, 4,364,163, Cl. 29-570.000.
Connare, Thomas J.: *See—*
Niemond, Larry A.; Helwig, Michael W., Jr.; and Connare, Thomas J., 4,364,772, Cl. 75-126.00R.
Conner, Algie J.: *See—*
Hutchings, Leroi E.; and Conner, Algie J., 4,364,819, Cl. 208-96.000.
Connor, Augustus S., Jr., to Wix Corporation. Liquid filter. 4,364,825, Cl. 210-109.000.
Conoco Inc.: *See—*
House, Horace F.; Peterson, Marvin L.; and Hein, Norman W., Jr., 4,365,306, Cl. 364-551.000.
Loegering, Cory L., 4,364,833, Cl. 210-521.000.
Consolidated Foods Corporation: *See—*
Nakhle, George D.; Bell, Cecil R.; Edwards, Arthur R.; Lathery, Willie M.; and Patel Navin D., 4,364,320, Cl. 112-262.200.
Cook Paint and Varnish Company: *See—*
Harwell, Kenneth E., 4,365,092, Cl. 564-135.000.
Cook, Peter B.; and Hunt, John H., to Allen & Hanburs Limited. Chemical compounds. 4,364,923, Cl. 424-46.000.
Cooper, Glenn D.; and Katchman, Arthur, to General Electric Company. Composition of polyphenylene ether resins and EPDM-polystyrenes modified with silicone oil. 4,365,038, Cl. 260-29.1SB.
Cooper, Glenn D.; and Katchman, Arthur, to General Electric Company. Compositions of polyphenylene oxides with EPDM-silicone rubber. 4,365,042, Cl. 525-68.000.
Cooper Industries, Inc.: *See—*
Subramaniam, Anand, 4,364,364, Cl. 123-527.000.
Cooper, Kenneth W.; and Shaffer, Jacob E., Jr., to Borg-Warner Corporation. Microcomputer control for inverter-driven heat pump. 4,364,237, Cl. 62-160.000.
Copley, George A., to Donaldson Company, Inc. Self-cleaning pulsed air cleaner. 4,364,751, Cl. 55-96.000.
Cordier, Jean; Demange, Michel; and Idier, Jean, to Societe Francaise d'Electrometallurgie SOFREM. Product for the desulphurization of cast irons and steels. 4,364,771, Cl. 75-58.000.
Cork, Dale J.; and Pellman, Russell, deceased (by Pellman, Marguerite, executrix), to W. R. Meadows, Inc. Method of and apparatus for producing asphalt saturated fiberboard. 4,364,975, Cl. 427-294.000.
Cornelius, Gail; and Olson, Lloyd C., to R. M. Wade & Co. Irrigation control system. 4,364,524, Cl. 239-720.000.
Corning Glass Works: *See—*
Levin, Philip S., 4,364,888, Cl. 264-177.00R.
Cornwell, Philip W.: *See—*
Sharp, Joseph F.; Sutter, Ormond S.; and Cornwell, Philip W., 4,364,686, Cl. 403-347.000.
Costa, Richard A., to BMI, Inc. Rebuilt coke oven heating chamber and method of making the same. 4,364,798, Cl. 202-267.00R.
Costanza, Albert J.: *See—*
Senyek, Michael L.; and Costanza, Albert J., 4,365,027, Cl. 523-332.000.
Cousin, Michel: *See—*
Meyer, Nicolas; and Cousin, Michel, 4,365,001, Cl. 428-480.000.
Coussot, Serge, to Etudes et Realisations Industrilles de Bersac (E.R.I.B.). Apparatus for stacking objects or groups of objects. 4,364,702, Cl. 414-31.000.
Couture, Maurice J.; and Hayashi, Dan, to Du Pont de Nemours, E. I., and Company. Method of manufacturing perfluoromethane and perfluoroethane. 4,365,102, Cl. 570-163.000.
Coutures, Jean L.: *See—*
Berger, Jean L.; and Coutures, Jean L., 4,365,217, Cl. 333-165.000.
Coventry Climax Limited: *See—*
Knight, William; and Marriott, David G., 4,364,449, Cl. 180-271.000.
Coyle, Forrest E.: *See—*
Halstead, Kenneth G.; Benbow, Eugene C.; and Coyle, Forrest E., 4,365,194, Cl. 324-116.000.
Coyle, Peter J.: *See—*
Lazzery, Angelo G.; Crouthamel, Marvin S.; and Coyle, Peter J., 4,364,508, Cl. 228-106.000.
Crago, Terril M., to Standun, Inc. Pulse liquid feeder system of the type used in lubrications systems and the like having broken line and flow rate detection. 4,364,452, Cl. 184-7.00E.
Craig, James R.; and Nerge, Steven F., to Machlett Laboratories, Incorporated, The. Servo operated fluoroscopic table. 4,365,345, Cl. 378-190.000.
Crane, Norman W., to Thames Water Authority. Sewer cleaning shoe with dam and jet nozzles. 4,364,141, Cl. 15-104.06R.
Cranin, A. Norman: *See—*
Sher, Jay H.; and Cranin, A. Norman, 4,364,381, Cl. 128-92.00E.
Crawford, George H.; Downing, Edward J.; and Schlemmer, Roy G., to Minnesota Mining and Manufacturing Company. Metal/metal oxide coatings. 4,364,995, Cl. 428-336.000.
Cretin, Jacques: *See—*
Beauducel, Claude; and Cretin, Jacques, 4,365,320, Cl. 367-21.000.
Crosby, Lawton H., to Morley Furniture Spring Corporation. Seat base assembly. 4,364,547, Cl. 267-110.000.
Croset, Michel; and Velasco, Gonzalo, to Thomson-CSF. Device for inserting a sensor into the exhaust conduits of an internal combustion engine and a fuel-control system using such a device. 4,364,226, Cl. 60-276.000.
Crosetti, Michael A.: *See—*
Crosetti, Stephen M.; and Crosetti, Michael A., 4,365,280, Cl. 360-137.000.
Crosetti, Stephen M.; and Crosetti, Michael A., to Bicro, Incorporated. Escutcheon simulative of a radio for disguising electronic apparatus. 4,365,280, Cl. 360-137.000.
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., to Texaco Inc. Burner for the partial oxidation of slurries of solid carbonaceous fuels. 4,364,744, Cl. 48-86.00R.
Crouthamel, Marvin S.: *See—*
Lazzery, Angelo G.; Crouthamel, Marvin S.; and Coyle, Peter J., 4,364,508, Cl. 228-106.000.
Crowder, Billy L.; and Reisman, Arnold, to International Business Machines Corporation. Semiconductor integrated circuit interconnections. 4,364,166, Cl. 29-571.000.
Crutchfield, E. Bryant; Wright, Richard F.; Adair, Paul C.; Harris, Seth O.; Shackle, Dale R.; and Williams, Dennis L., to Mead Corporation, The. Imaging element and an imaging technique. 4,365,018, Cl. 430-139.000.
Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Bollero, Adriano; Carpinello, Bruno; Galliano, Giuseppe; and Pomponi, Roberto, 4,365,193, Cl. 324-102.000.
Pira, Franco; and Ponte, Giovanni, 4,365,116, Cl. 179-84.00T.
Pirani, Giancarlo, 4,365,327, Cl. 370-18.000.
Cuellar, Edward A.: *See—*
Marks, Tobin J.; Cuellar, Edward A.; Miller, Steven S.; and Weitz, Eric, 4,364,870, Cl. 260-429.100.
Cummins Engine Company, Inc.: *See—*
Stang, John H., 4,364,233, Cl. 60-712.000.
Curt G. Joa, Inc.: *See—*
Radzins, Edmund, 4,364,787, Cl. 156-164.000.
Curtis, William A. Telephone hold circuit. 4,365,117, Cl. 179-99.00H.
Curtiss, John S., Jr., to Instrumental Products. Dispenser for roll of tickets in strip form. 4,364,501, Cl. 225-13.000.
Cutter Laboratories, Inc.: *See—*
Mitra, Gautam; Coan, Michael H.; and Wada, Shohachi, 4,364,861, Cl. 260-112.00B.
Cutts, William H. Method for applying sizing to warp yarns. 4,364,157, Cl. 28-179.000.
Cywinski, Norbert F., to El Paso Products Company. Production of dimethyl esters. 4,365,080, Cl. 560-204.000.
D.E.J. International Research Company B.V.: *See—*
van der Stegen, Gerrit H. D., 4,364,964, Cl. 426-422.000.
van der Stegen, Gerrit H. D.; and de Wilt, Hendricus G. J., 4,364,965, Cl. 426-481.000.
Daicel Chemical Industries Ltd.: *See—*
Takahashi, Shigeyuki; Yamamoto, Shozo; and Tsukane, Nagayoshi, 4,365,002, Cl. 428-483.000.
Daigo, Hiromiki: *See—*
Shimizu, Noboru; Yoshida, Hiroshi; Daigo, Hiromiki; Matumoto, Shiyouichi; and Uchino, Hiroyoshi, 4,365,081, Cl. 560-209.000.
Daikin Kogyo Co., Ltd.: *See—*
Nakagawa, Tsuneo; Hiramatsu, Uji; and Honda, Toshihide, 4,365,101, Cl. 570-145.000.
Tsunoda, Takahiro; Yamaoka, Tsuguo; and Tamaru, Sinji, 4,365,049, Cl. 526-245.000.
Daimler-Benz AG: *See—*
Mass, Manfred; and Walter, Gunter, 4,364,980, Cl. 428-35.000.
Daimler-Benz Aktiengesellschaft: *See—*
Fricker, Ludwig; and Abthoff, Jorg, 4,364,339, Cl. 123-41.420.
Kuus, Olaf; and Relovsky, Jakob, 4,364,498, Cl. 224-42.45R.
Dainippon Ink & Chemicals, Inc.: *See—*
Adachi, Tuneyuki; and Nakamura, Hiroshi, 4,365,037, Cl. 524-449.000.
Dainippon Pharmaceutical Co., Ltd.: *See—*
Yokogawa, Kanae; Yamamoto, Takeshi; Takase, Yoshiyuki; Katae, Hiromi; and Kawata, Shigeo, 4,364,926, Cl. 424-50.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Yamada, Mitsuhiko; and Nakade, Toshiaki, 4,365,273, Cl. 358-260.000.

Dalibout, Georges; and Grenier, Michel, to WABCO Westinghouse, S.A. Brake cylinder device combining a pneumatically-applied service brake and a spring-applied parking brake. 4,364,305, Cl. 92-63.000.

Dalton, Brian L.; and Froggatt, Robert J., to E M I Limited. Detector for responding to a two-dimensional pattern of X-radiation. 4,365,161, Cl. 378-99.000.

Daly, Robert C; and Guild, John R., to Eastman Kodak Company. Positive-working resist quinone diazide containing composition and imaging method having improved development rates. 4,365,019, Cl. 430-190.000.

Danforth, Claudia L.; and deRidder, Jon A., to Diamond Shamrock Corporation. Silicate treatment for coated substrate. 4,365,003, Cl. 428-552.000.

Danfoss A/S: *See—*
Andersen, Hans S.; and Christiansen, Preben, 4,364,304, Cl. 91-420.000.
Huelle, Zbigniew R.; Nielsen, Leif; and Jakobsen, Jakob S., 4,364,238, Cl. 62-217.000.
Thomsen, Svend E.; and Christensen, Thorkild, 4,364,302, Cl. 91-29.000.

D'Angelo, Antonio J.: *See—*
McKellin, Wilbur H.; Mageli, Orville L.; and D'Angelo, Antonio J., 4,365,086, Cl. 562-512.000.

Daniel Industries, Inc.: *See—*
Kim, Kee W., 4,364,544, Cl. 251-328.000.

Daniel, James A.; and Pinson, George T., to Boeing Company, The. Multi-position adjustable test fixture. 4,364,272, Cl. 73-432.00R.

Dannatt, Hugh S. L., to Pitney Bowes Inc. Heated fuser roll. 4,365,139, Cl. 219-216.000.

Darley, Kenneth S.; Fenn, Michael A. F.; and Dyson, David V., to Griffith Laboratories, Limited, The. Manufacture of bread crumb-like product. 4,364,961, Cl. 426-19.000.

Darlington, William B.; and Dubois, Donald W., to PPG Industries, Inc. Solid polymer electrolyte chlor-alkali process and electrolytic cell. 4,364,815, Cl. 204-283.000.

Darms, Roland; Kvita, Vratislav; and Greber, Gerd, to Ciba-Geigy Corporation. Crosslinkable bis-imidyl derivatives. 4,365,068, Cl. 548-435.000.

Dashefsky, Joseph H. Diagnostic instrument. 4,364,399, Cl. 128-774.000.

Daumit, Gene P.: *See—*
Edelman, Robert; McMahon, Paul E.; and Daumit, Gene P., 4,364,993, Cl. 428-288.000.

David, Constant V. Windmill. 4,364,708, Cl. 416-132.00B.

David, Mark E.: *See—*
Small, James E.; and David, Mark E., 4,365,289, Cl. 364-143.000.

Davidow, William H.: *See—*
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,365,295, Cl. 364-200.000.

Davidson, Peter. Holder for hydraulic swaging tool. 4,364,258, Cl. 72-453.150.

Davis, Donald E.; Moore, Richard D.; Ryan, Philip M.; and Weber, Edward V., to International Business Machines Corporation. Pattern inspection tool - method and apparatus. 4,365,163, Cl. 250-491.100.

Dayco Corporation: *See—*
Hetz, G. Brian, 4,364,736, Cl. 474-168.000.

Dearnaley, Geoffrey; and Watkins, Robert E. J., to United Kingdom Atomic Energy Authority. Method of coating titanium and its alloys. 4,364,969, Cl. 427-38.000.

De Asis, Lester. Apparatus and improved method of manufacturing handles for butterfly defense knife. 4,364,174, Cl. 30-153.000.

Debret, Alain; and Soetaert, Guy, to Regie Nationale des Usines Renault. Variable-play take-up joint. 4,364,149, Cl. 16-87.00R.

DeCasperis, Anthony J.; Roethlein, Richard J.; and Breault, Richard D., to United Technologies Corporation. Densified edge seals for fuel cell components. 4,365,008, Cl. 429-36.000.

Deere & Company: *See—*
Allen, David T.; and Baker, Keith R., 4,365,268, Cl. 358-93.000.

Degawa, Fumito: *See—*
Takeuchi, Hirosato; Degawa, Fumito; and Mikiya, Toshio, 4,364,373, Cl. 126-418.000.

DeGraff, Richard R.; and Peters, Kenneth D., to UOP Inc. Recovery of C_3+ hydrocarbon conversion products and net excess hydrogen in a catalytic reforming process. 4,364,820, Cl. 208-101.000.

Degussa AG: *See—*
Gliem, Ralf; and Brandt, Reinhard, 4,364,792, Cl. 156-628.000.

Dehaene, Jean P., to Thomson-CSF. Demodulator for signal which is frequency modulated by digital data. 4,365,205, Cl. 329-122.000.

DeLavarenne, Serge Y.; and Tellier, Pierre, to PCUK - Produits Chimiques Ugine Kuhlmann. Process for the preparation of 1,2,3,4-tetrahydro-9,10-anthracene-diol. 4,365,100, Cl. 568-733.000.

Delco Associates, Inc.: *See—*
D'Elia, Ronald, 4,364,475, Cl. 206-425.000.

Delcoigne, Adrien; and Lanneau, Jacques, to Saint Gobain Industries. Apparatus for making plaster board. 4,364,790, Cl. 156-346.000.

D'Elia, Ronald, to Delco Associates, Inc. Microfiche tray. 4,364,475, Cl. 206-425.000.

Delta Scan, Inc.: *See—*
Berman, Richard M.; and Feldgus, Ernest B., 4,365,275, Cl. 358-283.000.

Demange, Michel: *See—*
Cordier, Jean; Demange, Michel; and Idier, Jean, 4,364,771, Cl. 75-58.000.

Demura, Takayuki: *See—*
Yoshida, Seietsu; Niimi, Yukihide; Ito, Massao; Sawada, Hiroshi; and Demura, Takayuki, 4,364,227, Cl. 60-276.000.

Denk, Hans: *See—*
Reeh, Ulrike; and Denk, Hans, 4,365,052, Cl. 528-92.000.

Dennings, Clifford; and Smith, Alan. Controlling a yarn package at a winding station. 4,364,224, Cl. 57-263.000.

de Onate Fernandez de Gamboa, Gonzalo: *See—*
Mayo Magdaleno, Casimiro, 4,365,179, Cl. 310-81.000.

deRidder, Jon A.: *See—*
Danforth, Claudia L.; and deRidder, Jon A., 4,365,003, Cl. 428-552.000.

de Riz, Erich; and Ringel, Wolfgang, to Carl Freudenberg, Firma. Stiffening insert for wearing apparel. 4,364,125, Cl. 2-255.000.

Despotakis, John A.: *See—*
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,365,295, Cl. 364-200.000.

Detty, Michael R.; Murray, Bruce J.; and Perlstein, Jerome H., to Eastman Kodak Company. Benzotelluropyrylium diketonate electron accepting dye sensitizers for electron donating photoconductive compositions. 4,365,016, Cl. 430-83.000.

Detty, Michael R.; Murray, Bruce J.; and Perlstein, Jerome H., to Eastman Kodak Company. Telluropyrylium electron accepting dye sensitizers for electron donating photoconductive compositions. 4,365,017, Cl. 430-83.000.

Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See—*
Buschulte, Winfried, 4,364,725, Cl. 431-116.000.

de Wilt, Hendricus G. J.: *See—*
van der Stegen, Gerrit H. D.; and de Wilt, Hendricus G. J., 4,364,965, Cl. 426-481.000.

Dewolf, Lowell E.; Scrudato, James J.; and Wallace, Robert S., to Dewolf, Lowell E.; Scrudato, James J.; and Wallace, Robert S. Rosary device. 4,365,246, Cl. 340-802.000.

Diachuk, Wolodymyr, to Century 21 Pollution Control, Inc. Apparatus for separating foreign matter from a gas with a heat exchanger. 4,364,754, Cl. 55-269.000.

Diamond, Julius, to William H. Rorer, Inc. Ethynylbenzene compounds and derivatives thereof. 4,365,093, Cl. 564-307.000.

Diamond Shamrock Corporation: *See—*
Danforth, Claudia L.; and deRidder, Jon A., 4,365,003, Cl. 428-552.000.
Knitter, Kathy A.; and Villa, Jose' L., 4,364,742, Cl. 44-51.000.
Rogers, Douglas K., 4,364,805, Cl. 204-98.000.
Rogers, Douglas K., 4,364,806, Cl. 204-98.000.
Villa, Jose' L., 4,364,741, Cl. 44-51.000.

Dickman, John E.; and Donley, William B., to General Motors Corporation. Late programming using a silicon nitride interlayer. 4,364,165, Cl. 29-571.000.

Dickson, John. Method and apparatus for obtaining an efficiently running internal combustion engine. 4,364,265, Cl. 73-113.000.

DiEdwardo, Andrew H.: *See—*
Kalnin, Ilmar L.; Breckenridge, George J., Jr.; DiEdwardo, Andrew H.; and Rhodes, John M., 4,364,916, Cl. 423-447.600.

Diefenbach, Steven P., to Ethyl Corporation. Method of making aluminum alkyls. 4,364,872, Cl. 260-448.00A.

Diefenbach, Steven P., to Ethyl Corporation. Method of making aluminum alkyls. 4,364,873, Cl. 260-448.00A.

Diefenbach, Steven P., to Ethyl Corporation. Method of making aluminum alkyls. 4,364,874, Cl. 260-448.00A.

Diehl, Erwin; Muller, Wolfgang; and Stroh, Artur, to Th. Goldschmidt AG. Process for high-temperature galvanizing. 4,364,978, Cl. 427-433.000.

Dietel, George W.: *See—*
Turner, Jerome A.; and Dietel, George W., 4,364,188, Cl. 36-31.000.

Dilg, Walter C., to Dresser Industries, Inc. Apparatus for cushioning shock forces acting on the underframe of a railway car. 4,364,482, Cl. 213-8.000.

Dillinger, Robert B.: *See—*
Ripley-Lotee, Michael J.; Dillinger, Robert B.; and Clark, Keith E., 4,364,530, Cl. 244-3.220.

DiMassimo, Donald V.; and May, John B., to General Electric Company. Multi-frequency clock generator with error-free frequency switching. 4,365,203, Cl. 328-63.000.

Dittmar, Wilfried: *See—*
Franz, Reinhard; and Dittmar, Wilfried, 4,364,296, Cl. 84-1.260.

Dluhosch, Kurt, to Fichtel & Sachs AG. Carburetor control arrangement for internal combustion engine. 4,364,352, Cl. 123-376.000.

Dr. Karl Thomae Gesellschaft mit beschrankter Haftung: *See—*
Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, 4,364,944, Cl. 424-246.000.

Doi, Osamu: *See—*
Okamoto, Takashi; and Doi, Osamu, 4,365,041, Cl. 525-58.000.

Don Fell Limited: *See—*
Scott, William A., 4,364,205, Cl. 52-4.000.

Donachy, James H.: *See*—
Pierce, William S.; Wisman, Craig B.; and Donachy, James H., 4,364,127, Cl. 3-1.500.
Donaldson Company, Inc.: *See*—
Copley, George A., 4,364,751, Cl. 55-96.000.
Donato, Guido A.; Hammond, Edwin E.; and Mullowney, Robert A., to Drexel Industries, Inc. Temperature regulation system for electric vehicles. 4,364,444, Cl. 180-65.00R.
Donley, William B., to General Motors Corporation. Programming an IGFET read-only-memory. 4,364,167, Cl. 29-576.00B.
Donley, William B.: *See*—
Dickman, John E.; and Donley, William B., 4,364,165, Cl. 29-571.000.
Donnelly Mirrors, Inc.: *See*—
Morgan, Cleon; Pluta, Richard; and Thomas, John F., Jr., 4,364,214, Cl. 52-311.000.
Morgan, Cleon; Thomas, John F., Jr.; and Meyer, Raymond A., 4,364,595, Cl. 296-84.00R.
Dornheim, Hans-Peter, to Siemens Aktiengesellschaft. Stand for an x-ray image detection apparatus which is insertable beneath the patient support of an x-ray examination apparatus. 4,365,344, Cl. 378-189.000.
Doryokuro Kakunenryo Kaihatsu Jigyodan: *See*—
Ohtsuka, Katsuyuki; Ohuchi, Jin; and Takahashi, Yoshiharu, 4,364,859, Cl. 252-643.000.
Doucet, Marcel, to Societe Generale de Canalisations Sogecan. Process and an apparatus for the extrusion of plastic pipes with composite walls. 4,364,882, Cl. 264-45.900.
Douchy, Michel; Tranchant, Jean-Louis; and Jehan, Michel, to Vallourec. Manufacture of a composite tubular product. 4,364,770, Cl. 75-53.000.
Dow Chemical Company, The: *See*—
Bremmer, Bart J.; and Reierson, Robert L., 4,365,073, Cl. 549-451.000.
Chang, Kuo Y.; and Gatling, Sterling C., 4,365,103, Cl. 585-320.000.
Lee, John M.; and Bauman, William C., 4,364,909, Cl. 423-157.000.
Pawloski, Chester E.; and Ginter, Sally P., 4,365,026, Cl. 521-168.000.
Svatek, Katherine H.; Wilson, David A.; and Griffin, Freddie, Jr., 4,364,871, Cl. 260-439.00R.
Downing, Edward J.: *See*—
Crawford, George H.; Downing, Edward J.; and Schlemmer, Roy G., 4,364,995, Cl. 428-336.000.
Dowzall, Martin E., to Letraset Corporation. Indicia alignment device. 4,364,184, Cl. 33-447.000.
Drabek, Jozef; and Boger, Manfred, to Ciba-Geigy Corporation. Imino ether sulfide derivatives and use as insecticides. 4,364,959, Cl. 424-298.000.
Dragerwerk Aktiengesellschaft: *See*—
Warncke, Ernst; and Pasternack, Adalbert, 4,364,384, Cl. 128-204.280.
Dreesen, Peter; and Kiessling, Klaus, to Mannesmann-Demag AG. Grab bucket suspended from hoisting installation. 4,364,704, Cl. 414-624.000.
Dresser Industries, Inc.: *See*—
Dilg, Walter C., 4,364,482, Cl. 213-8.000.
Drexel Industries, Inc.: *See*—
Donato, Guido A.; Hammond, Edwin E.; and Mullowney, Robert A., 4,364,444, Cl. 180-65.00R.
Dria, Dennis E.: *See*—
Bremer, Noel J.; Dria, Dennis E.; and Weber, Andrew M., 4,365,069, Cl. 549-260.000.
Droste, Gunter: *See*—
Niehaus, Hermann; Droste, Gunter; and Stapel, Wilhelm, 4,364,319, Cl. 112-238.000.
Drumare, Huguette. Safety device against overpressures. 4,364,487, Cl. 220-89.00A.
Drysdale, Alcide, to Brunswick Mining and Smelting Corporation Limited. Diamond drill skid pad. 4,364,539, Cl. 248-647.000.
Dubois, Donald W.: *See*—
Darlington, William B.; and Dubois, Donald W., 4,364,815, Cl. 204-283.000.
DuBois, Jean-Pierre: *See*—
Bast, Eleanor A.; DuBois, Jean-Pierre; and MacLagen, Robert T., 4,365,140, Cl. 219-225.000.
Dudley, Irving C.: *See*—
Cassagnes, Andre J.; and Dudley, Irving C., 4,364,176, Cl. 33-18.00R.
Dumortier, Robert. Manhole cover assembly. 4,364,689, Cl. 404-25.000.
Dunlop Limited: *See*—
Haughton, Geoffrey J. S.; and Bimpson, Malcolm, 4,364,734, Cl. 441-37.000.
Dunlop Tire & Rubber Corporation: *See*—
Mills, Anthony M.; and Egan, Daniel C., 4,364,426, Cl. 152-209.00R.
Dunn, Gregory J.: *See*—
Eagar, Thomas W.; Kaiser, Joseph G.; and Dunn, Gregory J., 4,365,134, Cl. 219-118.000.
Dunseith, S. Michael, to Allis-Chalmers Corporation. Method and apparatus for sealing the inlet of a filter compartment to isolate the compartment within a baghouse installation. 4,364,749, Cl. 55-73.000.
Du Pont de Nemours, E. I., and Company: *See*—
Couture, Maurice J.; and Hayashi, Dan, 4,365,102, Cl. 570-163.000.
Schweitzer, Francis E., 4,365,053, Cl. 528-258.000.
Wei, Lun-Yan, 4,364,998, Cl. 428-399.000.
Durable Packaging Corporation: *See*—
Luyett, Joe G.; Ulrich, Lawrence W.; and Walker, Connie W., 4,364,219, Cl. 53-374.000.
Duracell International Inc.: *See*—
Partridge, Alan H., 4,364,800, Cl. 204-15.000.
Durametallic Corporation: *See*—
Hershey, Lowell E., 4,364,571, Cl. 277-86.000.
Durkoppwerke GmbH: *See*—
Bochert, Hubertus, 4,364,321, Cl. 112-311.000.
Niehaus, Hermann; Droste, Gunter; and Stapel, Wilhelm, 4,364,319, Cl. 112-238.000.
DuRoss, Robert M.: *See*—
Longrod, Scott J.; and DuRoss, Robert M., 4,364,682, Cl. 400-477.000.
Dussourd, Jules L.; and Luthi, Oscar, to Ingersoll-Rand Company. System for drying wet, porous webs. 4,364,185, Cl. 34-122.000.
Dutton, Edward I. Composition board. 4,364,979, Cl. 428-2.000.
Duwell, Ronald A.; and Sabottka, Jeffery A. Simulated golf board game. 4,364,569, Cl. 273-245.000.
Dwyer, Robert M.; and Skiba, Edwin J., to Massey-Ferguson Inc. Compound master brake cylinder. 4,364,231, Cl. 60-577.000.
Dynacraft Machine Company Limited: *See*—
Futehally, Rashid, 4,364,459, Cl. 192-0.033.
Dyson, David V.: *See*—
Darley, Kenneth S.; Fenn, Michael A. F.; and Dyson, David V., 4,364,961, Cl. 426-19.000.
E.C.H. Will (GmbH & Co.): *See*—
Besemann, Alfred, 4,364,552, Cl. 271-182.000.
Hirsch, Gerhard, 4,364,293, Cl. 83-674.000.
E M I Limited: *See*—
Dalton, Brian L.; and Froggatt, Robert J., 4,365,161, Cl. 378-99.000.
Eagar, Thomas W.; Kaiser, Joseph G.; and Dunn, Gregory J., to Massachusetts Institute of Technology. Method of resistance welding. 4,365,134, Cl. 219-118.000.
Eastman Kodak Company: *See*—
Barnes, Robert L., 4,364,907, Cl. 423-22.000.
Daly, Robert C; and Guild, John R., 4,365,019, Cl. 430-190.000.
Detty, Michael R.; Murray, Bruce J.; and Perlstein, Jerome H., 4,365,016, Cl. 430-83.000.
Detty, Michael R.; Murray, Bruce J.; and Perlstein, Jerome H., 4,365,017, Cl. 430-83.000.
Geyer, Frederick F.; and Leonard, Eric M., 4,365,258, Cl. 346-137.000.
Eaton Corporation: *See*—
Terwilliger, Gerald L., 4,364,366, Cl. 123-564.000.
Terwilliger, Gerald L., 4,364,367, Cl. 123-564.000.
Ebauches, S.A.: *See*—
Fluck, Josef, 4,364,671, Cl. 368-221.000.
Thoenig, Marcel; and Wattenhofer, Jean-Pierre, 4,364,669, Cl. 368-111.000.
Eberle, Gunter. Two part stand with receptacles for test tubes. 4,364,904, Cl. 422-104.000.
Eccardt, Curtis J., to Emerson Electric Co. Horizontal power band saw. 4,364,294, Cl. 83-796.000.
Eccardt, Curtis J., to Emerson Electric Co. Portable workbench. 4,364,548, Cl. 269-139.000.
Eck, Herbert; and Singer, Robert, to Wacker-Chemie GmbH. Aqueous plastic dispersions of unsaturated diacetylacetic ester. 4,365,040, Cl. 524-819.000.
Eckels, Phillip W., to Electric Power Research Institute, Inc. Fast starting cold shield cooling circuit for superconducting generators. 4,365,175, Cl. 310-53.000.
Eckert, Konrad, to Robert Bosch GmbH. Fuel injection system. 4,364,361, Cl. 123-453.000.
Ecodyne Corporation: *See*—
Lankenau, Henry G., 4,364,794, Cl. 159-17.00P.
Ecsery nee Puskas, Marian: *See*—
Takacs, Kalman; Kiss nee Ajzert, Ilona; Simay, Antal; Literati Nagy, Peter; Hetyey nee Papp, Maria; Ecsery nee Puskas, Marian; Szekeres, Laszlo; Papp, Gyula; Viragh, Sandor; and Udvardy, Eva, 4,365,064, Cl. 546-148.000.
Edelman, Robert; McMahon, Paul E.; and Daumit, Gene P., to Celanese Corporation. Sized carbon fibers, and thermoplastic polyester based composite structures employing the same. 4,364,993, Cl. 428-288.000.
Edison Price Incorporated: *See*—
Price, Edison A., 4,364,626, Cl. 339-184.00M.
Eduardovich, Pukhalsky M.: *See*—
Prokofievna, Skripchik L.; Moiseevich, Shutov G.; Emmanuilovna, Erdman M.; Eduardovich, Pukhalsky M.; Ivanovich, Lezhen V.; Ignatievich, Shevchenko A.; and Vladimirovich, Vrublevsky E., 4,364,976, Cl. 427-382.000.
Edwards, Arthur R.: *See*—
Nakhle, George D.; Bell, Cecil R.; Edwards, Arthur R.; Lathery, Willie M.; and Patel Navin D., 4,364,320, Cl. 112-262.200.
Egan, Daniel C.: *See*—
Mills, Anthony M.; and Egan, Daniel C., 4,364,426, Cl. 152-209.00R.
Eggler, James F.: *See*—
Bindra, Jasjit S.; Eggler, James F.; Johnson, Michael R.; and Schaaf, Thomas K., 4,365,077, Cl. 560-53.000.
Egyt Gyogyszervegyeszeti Gyar: *See*—
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Jakab, Jozsef; Kistamas, Attila; and Ujvari, Istvan, 4,364,931, Cl. 424-84.000.

Eheim, Franz; and Hofer, Gerald, to Robert Bosch GmbH. Fuel injection system functioning with pump/nozzles. 4,364,360, Cl. 123-450.000.
Ehrengard, Dag E.: *See*—
Treiber, Erich E.; Ehrengard, Dag E.; and Lidbrandt, Owe S., 4,364,890, Cl. 264-191.000.
Eidetic Images, Inc.: *See*—
Haines, Kenneth A., 4,364,627, Cl. 350-3.760.
Eino, Tomomi: *See*—
Kondo, Toshio; Kobayashi, Akio; Eino, Tomomi; and Tajima, Masahiko, 4,365,299, Cl. 364-431.060.
Eisenhuth, Karlheinz: *See*—
Fabian, Peter; Eisenhuth, Karlheinz; Jedlitschka, Ernst; and Krebs, Helmut, 4,364,811, Cl. 204-220.000.
Eiswerth, James E.; Lievestro, Louis; Haubert, Richard C.; and Maclin, Harvey M., to General Electric Company. Method of fabricating a hollow article. 4,364,160, Cl. 29-156.80H.
Eknes, Georg. Articles of furniture. 4,364,606, Cl. 297-337.000.
El Paso Products Company: *See*—
Cywinski, Norbert F., 4,365,080, Cl. 560-2[illegible].000.
Elas Trust Reg.: *See*—
Waldmeier, Othmar E., 4,364,472, Cl. 206-45.340.
Electric Furnace Company, The: *See*—
Stamp, Donald F., 4,364,728, Cl. 432-8.000.
Electric Power Research Institute, Inc.: *See*—
Eckels, Phillip W., 4,365,175, Cl. 310-53.000.
Electricite de France (Service National): *See*—
Chapelle, Jules A.; Levacher, Jean-Pierre; Sanzey, Emile; and Vironneau, Pierre, 4,364,239, Cl. 62-235.100.
Electrolux Corporation: *See*—
Bowerman, Leonard E., 4,364,146, Cl. 15-323.000.
Elioform AG: *See*—
Brazzola, Luigi, 4,364,374, Cl. 126-442.000.
Eller, J. David. Hydraulic turbine system with siphon action. 4,364,228, Cl. 60-398.000.
Elliott Brothers (London) Limited: *See*—
Ellis, Stafford M., 4,364,636, Cl. 350-174.000.
Elliott, Herbert J. Sulphur pelletizing. 4,364,774, Cl. 106-287.130.
Ellis, Stafford M., to Elliott Brothers (London) Limited. Helmet mounted sight with fixed display and pivotal arm. 4,364,636, Cl. 350-174.000.
Elms, Robert T., to Westinghouse Electric Corp. High accuracy AC electric energy metering system. 4,365,302, Cl. 364-483.000.
Elreco Corporation, The: *See*—
McKee, Kimball K., 4,365,129, Cl. 200-162.000.
Elsner, Uwe: *See*—
Komossa, Werner; and Elsner, Uwe, 4,364,402, Cl. 131-311.000.
Eltee Pulsitron: *See*—
Johanson, Lars; Haft, Phil; Bonavita, Frank; Feldstein, George; Greenberg, Steve; and Brady, Kevin, 4,365,300, Cl. 364-474.000.
Emden, Bernard V.: *See*—
Barto, Robert M., Jr.; Lopata, Ira; and Emden, Bernard V., 4,364,529, Cl. 242-195.000.
Emerson Electric Co.: *See*—
Babb, Larry F.; and Noveske, Walter J., 4,364,139, Cl. 15-104.3SN.
Eccardt, Curtis J., 4,364,294, Cl. 83-796.000.
Eccardt, Curtis J., 4,364,548, Cl. 269-139.000.
Tuggle, Lloyd H.; Loyd, Ronald C.; and Walker, Lee R., 4,364,435, Cl. 172-15.000.
Emhart Industries, Inc.: *See*—
Small, James E.; and David, Mark E., 4,365,289, Cl. 364-143.000.
EMI Limited: *See*—
Birt, David E., 4,364,816, Cl. 204-297.00W.
Emmanuilovna, Erdman M.: *See*—
Prokofievna, Skripchik L.; Moiseevich, Shutov G.; Emmanuilovna, Erdman M.; Eduardovich, Pukhalsky M.; Ivanovich, Lezhen V.; Ignatievich, Shevchenko A.; and Vladimirovich, Vrublevsky E., 4,364,976, Cl. 427-382.000.
Emmerich nee Giesche, Monika. Orthopedic device to prevent distortion of infant's feet. 4,364,135, Cl. 5-443.000
Emultec Limited: *See*—
McBride, Alistair D.; and Ripley, Ian S., 4,364,776, Cl. 134-10.000.
Endo, Hiroyoshi: *See*—
Kiyoki, Mamoru; Endo, Hiroyoshi; Naruchi, Tatsuyuki; and Hashimoto, Yoshinobu, 4,364,941, Cl. 424-236.000.
Endo, Takuro; Tomita, Yukio; Okamoto, Yukiro; Imaoka, Hiroshi; and Sakiyama, Michio, to Hitachi Shipbuilding & Engineering Company Limited. Rotary transfer press. 4,364,257, Cl. 72-405.000.
Energy Research Corporation: *See*—
Baker, Bernard S., 4,365,006, Cl. 429-17.000.
Maru, Hansraj C.; and Patel, Pinakin S., 4,365,007, Cl. 429-19.000.
Enga, Bernard E., to Johnson, Matthey & Co., Limited. Heat treatment of foodstuff. 4,364,727, Cl. 432-1.000.
Engineering Inventions, Inc.: *See*—
John, Raymond; Apfelbaum, Jerome G.; and Moore, Robert L., 4,364,308, Cl. 99-351.000.
Engineering Management Services Limited: *See*—
Smith, Michael V. B., 4,364,242, Cl. 62-99.000.
English Electric Valve Company Limited: *See*—
Brady, Michael B. C.; and Goddard, Michael L., 4,365,185, Cl. 315-39.690.
Kettle, Leslie J.; and Newton, Barry P., 4,365,287, Cl. 363-94.000.
Envirotech Corporation: *See*—
Guttman, Murray M., 4,364,827, Cl. 210-225.000.
Wawro, Walter G., 4,364,834, Cl. 210-525.000.
Epstein, Ronald A.: *See*—
Mink, Robert I.; and Epstein, Ronald A., 4,364,853, Cl. 252-429.00B.
Eremin, Viktor I.: *See*—
Gorbatov, Vasily M.; Spirin, Evgeny T.; Shakhov, Vladimir V.; Vagin, Viktor V.; Khromov, Vyacheslav I.; Bogushev, Zimel A.; Eremin, Viktor I.; Vainzof, Kaletta M.; and Podkhvatilin, Evgeny R., 4,364,309, Cl. 99-352.000.
Erholm, Gary W. Ground-raking, rock-gathering attachments for tractors. 4,364,434, Cl. 171-63.000.
Erickson, Terrence J.: *See*—
Smith, Byron D.; and Erickson, Terrence J., 4,364,370, Cl. 123-575.000.
Erickson Tool Company: *See*—
Miles, Wilbur N., 4,364,694, Cl. 408-139.000.
Erner, William E. Synthetic liquid fuel and fuel mixtures for oil-burning devices. 4,364,743, Cl. 44-66.000.
Ernest, Ivan; Gosteli, Jacques; and Woodward, Robert B., to Ciba-Geigy Corporation. Bicyclic unsaturated thia-aza compounds and 4-acylthio azetidinone intermediates. 4,364,865, Cl. 260-239.00A.
Ernst Leitz Wetzlar GmbH: *See*—
Willhelm, Jorg; Jacoby, Hans-Dieter; Schuster, Erich; and Prinz, Dieter, 4,364,180, Cl. 33-174.00L.
Erwin Sick GmbH Optik-Elektronik: *See*—
Walter, Arthur, 4,365,188, Cl. 318-282.000.
Esparza, Carlos, Jr.: *See*—
Mulholland, Wayne A.; Martin, Robert J.; Wilson, David S.; and Esparza, Carlos, Jr., 4,364,620, Cl. 339-17.0CF.
Espenscheid, Wilton F., to Mobil Oil Corporation. Separation of thiosulfate from Stretford solution. 4,364,918, Cl. 423-573.00R.
Etablissements Montabert S.A.: *See*—
Montabert, Roger, 4,364,540, Cl. 248-654.000.
Etheridge, Robert E.; and Lewis, Philip L. Hopper cleaner attachment. 4,364,517, Cl. 239-171.000.
Ethyl Corporation: *See*—
Diefenbach, Steven P., 4,364,872, Cl. 260-448.00A.
Diefenbach, Steven P., 4,364,873, Cl. 260-448.00A.
Diefenbach, Steven P., 4,364,874, Cl. 260-448.00A.
Etudes et Realisations Industrilles de Bersac (E.R.I.B.): *See*—
Coussot, Serge, 4,364,702, Cl. 414-31.000.
Euler, Richard W., to Bendix Corporation, The. Retaining ring. 4,364,615, Cl. 308-236.000.
Exxon Research & Engineering Co.: *See*—
Grimes, Patrick G.; and Bellows, Richard J., 4,365,009, Cl. 429-50.000.
Oswald, Alexis A.; and Barnum, Harry W., 4,365,030, Cl. 523-508.000.
Younghouse, Lawrence B., 4,364,375, Cl. 126-444.000.
Fabian, Peter; Eisenhuth, Karlheinz; Jedlitschka, Ernst; and Krebs, Helmut, to Heraeus Elektroden GmbH. Electrodes for electrolytic cells. 4,364,811, Cl. 204-220.000.
Fahrig, Robert J.; and Hinrichs, Lansing M., to Standard Oil Company (Indiana). Fluid catalytic cracking apparatus having riser reactor and improved means associated with the riser reactor for separating cracked product and entrained particulate catalyst. 4,364,905, Cl. 422-144.000.
Fairchild Camera and Instrument Corp.: *See*—
Rice, Rex, 4,365,332, Cl. 371-13.000.
Falbel, Gerald, to United States of America, Army. Mortar fire control system. 4,365,149, Cl. 235-404.000.
Faler, Gary R.; and Mendiratta, Ashok K., to General Electric Company. Process for the production of bisphenols. 4,365,099, Cl. 568-726.000.
Falkowski, Leonard S.; Stefanska, Barbara J.; Troka, Elzbieta; Golik, Jerzy J.; and Borowski, Edward, to Politechnika Gdanska. Method of preparation of esters of antibiotics selected from the group consisting of polyene macrolides and of N-substituted derivatives thereof. 4,365,058, Cl. 536-6.500.
Faltus, Arthur V. Turnover conveyor. 4,364,463, Cl. 198-405.000.
Fan, Fu-Ren F.: *See*—
Bard, Allen J.; Fan, Fu-Ren F.; and Reichman, Benjamin, 4,365,010, Cl. 429-111.000.
Farge, Daniel; Moutonnier, Claude; Le Roy, Pierre; and Peyronel, Jean-Francois, to Rhone-Poulenc Industries. Cephalosporin derivatives. 4,365,062, Cl. 544-22.000.
Farkas, Daniel S.; and Zabor, Eric R., to Owens-Illinois, Inc. Automatic stop routine for a glassware forming machine. 4,364,764, Cl. 65-29.000.
Fasco Industries, Inc.: *See*—
Barry, Leon G.; and Rieman, Willis E., 4,365,226, Cl. 337-198.000.
Fasig, Harold A.; and Horak, Anthony, to Burroughs Corporation. Sensor for a document processor. 4,365,151, Cl. 250-222.00R.
Faure, Jean-Louis, to ASA S.A. Machine for producing self-twisting yarns. 4,364,225, Cl. 57-291.000.
Fechant, Louis J. M.; Siffroi, Lucien; and Anguille, Jean M., to La Telemecanique Electrique. Magnetic circuit. 4,365,223, Cl. 335-281.000.
Feinbloom, William. Adjustable frame apparatus for telescopic spectacles. 4,364,645, Cl. 351-204.000.
Feldgus, Ernest B.: *See*—
Berman, Richard M.; and Feldgus, Ernest B., 4,365,275, Cl. 358-283.000.
Feldmaier, Douglas A.: *See*—
Chen, Francis H.; Feldmaier, Douglas A.; and Hamburg, James A., 4,364,260, Cl. 73-35.000.

Feldman, Steven, to AMP Incorporated. Lead screw type variable resistor. 4,365,230, Cl. 338-180.000.
Feldstein, George: *See*—
Johanson, Lars; Haft, Phil; Bonavita, Frank; Feldstein, George; Greenberg, Steve; and Brady, Kevin, 4,365,300, Cl. 364-474.000.
Felix Schoeller, Jr. GmbH & Co.: *See*—
Sack, Wieland; Anthonsen, Reiner; and Kertesz, Ferenc, 4,364,971, Cl. 427-44.000.
Feltham, John: *See*—
Vambutas, Edmundas; and Feltham, John, 4,364,244, Cl. 66-75.200.
Fenn, Michael A. F.: *See*—
Darley, Kenneth S.; Fenn, Michael A. F.; and Dyson, David V., 4,364,961, Cl. 426-19.000.
Ferguson, Archibald E.: *See*—
Levake, Richard N.; and Ferguson, Archibald E., 4,364,175, Cl. 33-1.00H.
Ferri, Hans. Filter assembly. 4,364,755, Cl. 55-290.000.
Feutrel, Claude, to Commissariat a l'Energie Atomique. Anti-fly-off device. 4,364,901, Cl. 376-438.000.
Feutrel, Claude, to Commissariat a l'Energie Atomique. Device for fixing a spring to a spacing grid for fuel elements of nuclear reactors. 4,364,902, Cl. 376-441.000.
Fiala, Ernst, to Volkswagenwerk Aktiengesellschaft. Anti-knocking apparatus for an internal combustion engine. 4,364,353, Cl. 123-425.000.
Fiat-Allis Macchine Movimento Terra, S.p.A.: *See*—
Rigazio, Corrado, 4,364,602, Cl. 297-334.000.
Fiber Associates, Inc.: *See*—
Geyer, Charles J., Jr.; and White, Ben E., 4,364,889, Cl. 264-188.000.
Fichtel & Sachs AG: *See*—
Dluhosch, Kurt, 4,364,352, Cl. 123-376.000.
Fichtel & Sachs A.G.: *See*—
Wossner, Felix; and Handke, Gunther, 4,364,457, Cl. 188-322.170.
Filbert, Janice R.: *See*—
Shive, Stewart S., Jr., 4,364,494, Cl. 223-28.000.
Finch, Colin M. Proximity sensing transducer with simulation means. 4,365,196, Cl. 324-207.000.
Finike Italiana Marposs, S.p.A.: *See*—
Albertazzi, Gastone, 4,364,181, Cl. 33-174.00L.
Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,364,177, Cl. 33-147.00K.
Finney, Roy P. Penile erectile system. 4,364,379, Cl. 128-79.000.
Firestone Tire & Rubber Company, The: *See*—
Stabley, Bernard D., Jr., 4,365,054, Cl. 528-277.000.
Firmenich SA: *See*—
Winter, Max, deceased; and Mottu, Pierre, executor, 4,364,400, Cl. 131-277.000.
Fischer, Jochen: *See*—
Schneider, Gerhard; Ludwig, Rolf; and Fischer, Jochen, 4,364,317, Cl. 112-132.000.
Schneider, Gerhard; Ludwig, Rolf; and Fischer, Jochen, 4,364,318, Cl. 112-147.000.
Fisher, Edmund A.; and Platou, John S., to Cameron Iron Works, Inc. Remote connection apparatus. 4,364,433, Cl. 166-339.000.
Fisher, John A. Rock and roll recreational toy. 4,364,579, Cl. 280-206.000.
Fisher, Stanton E. Unitized animal food system product. 4,364,925, Cl. 424-50.000.
Fitch, Richard A.; and Roe, Joseph T. Electrostatic precipitator apparatus having an improved ion generating means. 4,364,752, Cl. 55-138.000.
Fitexa S.A.: *See*—
Baron, Gerard, 4,364,197, Cl. 47-56.000.
Fleetwood Systems, Inc.: *See*—
Mojden, Wallace W., 4,364,466, Cl. 198-459.000.
Fleming, Peter B.; Licht, Richard R.; and Peisert, Joseph C., to Minnesota Mining and Manufacturing Company. Fire barrier device. 4,364,210, Cl. 52-221.000.
Flesche, Klaus: *See*—
Moll, Hans; and Flesche, Klaus, 4,364,599, Cl. 296-190.000.
Flexitallic Gaskets Limited: *See*—
Gee, Colin, 4,364,982, Cl. 428-65.000.
Flickinger, Jon M., to L. & D. Sales Corporation. Digital scale. 4,364,442, Cl. 177-177.000.
Fluck, Josef, to Ebauches, S.A. Electronic watch with display by discs. 4,364,671, Cl. 368-221.000.
Foenard, Pierre, to Societe a Responsabilite Limitee: Societe de Development pour l'Agriculture Sodelvage. Floor covering for stabling. 4,364,331, Cl. 119-28.000.
Foerster, Rolf F., to Northern Petrochemical Company. Polyolefin catalysts containing heterocyclic carboxylic acid esters. 4,364,852, Cl. 252-429.00B.
Fogelberg, Ernst R., to AB Bonnierforetagen. Process and composition for minimizing accumulation of moisture on a cold surface exposed to humid conditions and product obtained thereby. 4,364,994, Cl. 428-316.600.
Ford, Michael A.: *See*—
Hannah, Robert W.; Coates, John P.; Savitzky, Abraham; Ford, Michael A.; and Carter, Harry V., 4,365,303, Cl. 364-498.000.
Ford Motor Company: *See*—
Asik, Joseph R., 4,364,342, Cl. 123-143.00B.
Theodore, Ares N.; and Pett, Robert A., 4,364,783, Cl. 156-69.000.
Forenade Farbiksverken: *See*—
Alpkvist, Jan A., 4,364,724, Cl. 431-11.000.
Forney Engineering Company: *See*—
Grisham, James S., Jr., 4,365,297, Cl. 364-200.000.
Forster, Siegfried; Kleemann, Manfred; and Sack, Berthold, to Kernforschungsanlage Julich GmbH. Ceramic burner head with separate fuel and oxidizer passages. 4,364,726, Cl. 431-215.000.
Fortlage, Paul R.: *See*—
Plamper, Gerhard R.; Fortlage, Paul R.; and Kaesgen, Hans-Hartmut, 4,364,735, Cl. 474-14.000.
Frank, Bettie M.: *See*—
Waitman, Reuben H.; and Frank, Bettie M., 4,364,968, Cl. 426-639.000.
Franklin Electric Co., Inc.: *See*—
Whitney, John A., 4,365,148, Cl. 235-383.000.
Franz, Reinhard; and Dittmar, Wilfried, to Franz, Reinhard. Electrical musical instrument. 4,364,296, Cl. 84-1.260.
Fraser, William A.: *See*—
Horner, Jerome T.; Anthony, John; and Fraser, William A., 4,364,981, Cl. 428-35.000.
Frentress, Zane, to Milliken Research Corporation. Line sensor arrangement. 4,364,502, Cl. 226-45.000.
Frentress, Zane, to Milliken Research Corporation. Random signal generator for the manufacture of slub open end spun yarn. 4,365,145, Cl. 235-92.0CT.
Frentzel, Richard L., to Celotex Corporation, The. Polyoxyalkylene/unsaturated diester reaction product for cellular foam stabilization. 4,365,024, Cl. 521-114.000.
Frerking, Harlan W., Jr.: *See*—
Pesata, Patrick J., Jr.; Frerking, Harlan W., Jr.; and Bletso, Nelson C., 4,365,046, Cl. 525-438.000.
Fresch, Haase D., to Cadre Corporation, The. Ladle heating system with air seal and heat shield. 4,364,729, Cl. 432-9.000.
Fricker, Ludwig; and Abthoff, Jorg, to Daimler-Benz Aktiengesellschaft. Internal combustion engine with cooling system. 4,364,339, Cl. 123-41.420.
Fried. Krupp Huttenwerke AG: *See*—
Raquet, Erwin, 4,364,594, Cl. 295-7.000.
Friedrich Theysohn, Firma: *See*—
Theysohn, Friedrich, 4,364,664, Cl. 366-84.000.
Fringeli, Werner, to Ciba-Geigy Corporation. Concentrated aqueous solutions of sulfo group-containing fluorescent brighteners which are stable on storage. 4,364,845, Cl. 252-301.220.
Froese, Abram; Onotera, Larry Y.; and Liebelt, Alvin, to AEL Microtel, Ltd. Built-in linearity testing arrangement for an FM radio system. 4,365,346, Cl. 455-42.000.
Froggatt, Robert J.: *See*—
Dalton, Brian L.; and Froggatt, Robert J., 4,365,161, Cl. 378-99.000.
Frohberger, Paul-Ernst: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,364,955, Cl. 424-269.000.
Froome, Keith D., to National Research Development Corporation. Optical refractometer. 4,364,271, Cl. 73-432.00R.
Frueh, John J. Brake release automotive fuel control assembly. 4,364,458, Cl. 192-3.00T.
Frushour, Bruce G., to Monsanto Company. Wet melting point analysis. 4,364,675, Cl. 374-16.000.
Fuginaga, Masataka: *See*—
Umemura, Sumio; Ohdan, Kyoji; Sakai, Fumihiko; Suzuki, Kenichi; Bando, Yasuo; Hogami, Toshihiko; and Fuginaga, Masataka, 4,364,844, Cl. 252-435.000.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Shikata, Makoto; and Matsui, Fujio, 4,364,358, Cl. 123-440.000.
Fuji Oil Company, Limited: *See*—
Teranishi, Susumu; Kawasaki, Yoichi; Katayama, Tsutomu; and Taniguchi, Hitoshi, 4,364,862, Cl. 260-112.00R.
Fuji Photo Film Co., Ltd.: *See*—
Terashita, Takaaki; Shiota, Kazuo; and Nakauchi, Kenji, 4,364,650, Cl. 354-31.000.
Fuji Xerox Co., Ltd.: *See*—
Takenouchi, Mutsuo; and Sadamatsu, Shigeru, 4,365,274, Cl. 358-293.000.
Fujii, Hidetsugu: *See*—
Ono, Hiroshi; Fujii, Hidetsugu; and Inoue, Shigeru, 4,365,089, Cl. 564-67.000.
Fujii, Shin: *See*—
Ohkawa, Koue; Fujii, Shin; and Seino, Takashi, 4,365,047, Cl. 525-447.000.
Fujii, Tomoo: *See*—
Hattori, Mitsuhiro; Fujii, Tomoo; and Kono, Hiroya, 4,364,306, Cl. 92-71.000.
Fujimoto, Isao, to Sanyo Electric Co., Ltd. Tuning voltage generating apparatus of voltage synthesizer type. 4,365,348, Cl. 455-180.000.
Fujimoto, Michitaro; Fukui, Takaichi; Mozai, Toshimitsu; and Funazo, Yoshikazu, to Fujimoto Pharmaceutical Corporation. Method for preparing pharmacologically active cyanoguanidine derivative. 4,365,067, Cl. 548-342.000.
Fujimoto Pharmaceutical Corporation: *See*—
Fujimoto, Michitaro; Fukui, Takaichi; Mozai, Toshimitsu; and Funazo, Yoshikazu, 4,3C5,067, Cl. 548-342.000.
Fujimoto, Teruo; Nagasawa, Mitsuru; and Ohno, Syotaro, to Toyo Soda Manufacturing Co., Ltd. Method for manufacturing block copolymer. 4,365,023, Cl. 521-32.000.
Fujinami, Shosaku: *See*—
Ishii, Yoshiaki; Ando, Naoyoshi; Kume, Tsutomu; and Fujinami, Shosaku, 4,364,796, Cl. 201-4.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,364,943, Cl. 424-246.000.
Fujitsu Limited: *See—*
Takemae, Yoshihiro, 4,365,319, Cl. 365-200.000.
Tanaka, Katsuo, 4,365,284, Cl. 361-395.000.
Fukaya, Koichi: *See—*
Kawano, Kenzi; Fukaya, Koichi; and Jyoko, Keizou, 4,364,169, Cl. 29-596.000.
Fukazawa, Tokuumi: *See—*
Oi, Tetsu; Takagi, Kazumasa; and Fukazawa, Tokuumi, 4,365,155, Cl. 378-49.000.
Fukuchi, Satoshi, to Hitachi Denshi Kabushiki Kaisha. Integrated high frequency amplifier. 4,365,207, Cl. 330-260.000.
Fukuda, Shuzo; and Ohkubo, Yutaka, to Nippon Kokan Kabushiki Kaisha. Apparatus for continuous dip-plating on one-side of steel strip. 4,364,328, Cl. 118-411.000.
Fukui, Hishao: *See—*
Kohno, Tadashi; Shimizu, Takahiko; Takahashi, Kenji; Fukui, Hishao; Okubo, Akio; and Masuda, Noriaki, 4,364,684, Cl. 401-264.000.
Fukui, Takaichi: *See—*
Fujimoto, Michitaro; Fukui, Takaichi; Mozai, Toshimitsu; and Funazo, Yoshikazu, 4,365,067, Cl. 548-342.000.
Fukui, Yoshiharu: *See—*
Shiga, Akinobu; Fukui, Yoshiharu; Sasaki, Toshio; Okawa, Masahisa; Matsu-Ura, Hideaki; and Yamada, Yasuharu, 4,364,851, Cl. 252-429.00B.
Fukui, Yoshinori: *See—*
Nishihara, Masao; Fukui, Yoshinori; Kitamura, Yoshio; Kamikawa, Yoshiyuki; and Azuma, Haruki, 4,364,251, Cl. 72-58.000.
Fukunaga, Yasushi; and Bandoh, Tadaaki, to Hitachi, Ltd. Control of instruction pipeline in data processing system. 4,365,311, Cl. 364-900.000.
Fukuoka Kagaku Kogyo Kabushiki Kaisha: *See—*
Fukuoka, Sadao, 4,364,186, Cl. 36-3.00B.
Fukuoka, Sadao, to Fukuoka Kagaku Kogyo Kabushiki Kaisha. Ventilated footwear. 4,364,186, Cl. 36-3.00B.
Funazo, Yoshikazu: *See—*
Fujimoto, Michitaro; Fukui, Takaichi; Mozai, Toshimitsu; and Funazo, Yoshikazu, 4,365,067, Cl. 548-342.000.
Funk, Albert G.; Wasson, Daniel A.; and Ikeda, Joe N., to IRECO Chemicals. Permissible slurry explosive. 4,364,782, Cl. 149-21.000.
Furlette, James L.; and Stadler, Donald A. Automatic accumulating lift and carry transfer mechanism. 4,364,471, Cl. 198-751.000.
Furmanov, Jury A.: *See—*
Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; Shalimov, Alexandr A.; Furmanov, Jury A.; Silchenko, Valery P.; Shalimov, Sergei A.; Khadzhai, Yaroslav I.; Obolentseva, Galina V.; and Vorobiev, Nikolai E., 4,364,393, Cl. 128-335.500.
Futehally, Rashid, to Dynacraft Machine Company Limited. Electromechanical coupling system for preventing a mechanical device from operating beyond preselected operating parameters or control parameters. 4,364,459, Cl. 192-0.033.
G.A.L. Manufacturing Corporation: *See—*
Glaser, Walter; and Glaser, Herbert P., 4,364,454, Cl. 187-57.000.
Gado, Istvan; Jekkel nee Bokany, Antonia; Szvoboda, Gyorgy; Jarai, Miklos; Piukovich, Sandor; and Istvan, Sandor, to CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara R.T. Method for the preparation of antibiotic sisomicin. 4,365,020, Cl. 435-80.000.
Gagnebin, Pierre-Luc; and Ginalski, Pierre, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Timepiece with seconds display on demand. 4,364,668, Cl. 368-80.000.
Gailey, J. Lynn; and Wollam, Carl A., to Alcan Aluminum Corporation. Suspended ceiling assembly and stabilizer bar therefor. 4,364,215, Cl. 52-488.000.
Gaiser, Willi: *See—*
Leins, Eberahrd; Walter, Manfred; and Gaiser, Willi, 4,364,245, Cl. 66-78.000.
Leins, Eberhard; Walter, Manfred; and Gaiser, Willi, 4,364,246, Cl. 66-145.00R.
Galliano, Giuseppe: *See—*
Bollero, Adriano; Carpinello, Bruno; Galliano, Giuseppe; and Pomponi, Roberto, 4,365,193, Cl. 324-102.000.
Gander, Robert J.; Buck, Carl J.; and Sipos, Tibor, to Johnson & Johnson Products, Inc. Alkali metal salts of poly(vinylbenzoic acid) as dental plaque barrier agents. 4,364,924, Cl. 424-49.000.
Garber Company, The: *See—*
Meyers, George, 4,364,504, Cl. 226-76.000.
Garcea, Giampaolo, to Alfa Romeo S.p.A. Circuit of the coolant in internal combustion engines for improving engine operation after cold starting. 4,364,338, Cl. 123-41.100.
Gardner, Chester S.; and Streight, William E., to Caterpillar Tractor Co. Surface roughness gauge and method. 4,364,663, Cl. 356-371.000.
Garel-Jones, Philip M.: *See—*
Sinclair, William J.; Straus, Josef; and Garel-Jones, Philip M., 4,364,639, Cl. 350-331.00R.
Gariaschi, Eufemia. Latching device for the punch-carrier plate of a press for moulding screws, rivets and like articles. 4,364,256, Cl. 72-356.000.
Garlock, Inc.: *See—*
Thompson, Steven R., 4,364,588, Cl. 285-419.000.
Garner, Frederick, to Marconi Company Limited, The. Optical sights. 4,364,628, Cl. 350-500.000.
Gatling, Sterling C.: *See—*
Chang, Kuo Y.; and Gatling, Sterling C., 4,365,103, Cl. 585-320.000.
Gaudet, Henri, to Compagnie Miniere de l'Ogooue COMILOG. Single rope cableway with detachable head carriages. 4,364,314, Cl. 104-225.000.
Gautier, Guy; and Bondiguet, Regis, to Regie Nationale des Usines Renault. Gasket seal for a sliding rod in a guide bush. 4,364,573, Cl. 277-153.000.
Gautier, Jean-Claude C.: *See—*
Boileau, Sylvie L.; N'Guyen, Thanh-Dung; and Gautier, Jean-Claude C., 4,365,094, Cl. 568-14.000.
Gebhard, Paul C. Window glazing system. 4,364,209, Cl. 52-208.000.
Gebr. Happich GmbH: *See—*
Janz, Joachim, 4,364,685, Cl. 403-108.000.
Viertel, Lothar; and Kaiser, Klaus-Peter, 4,364,597, Cl. 296-97.00H.
Viertel, Lothar, 4,364,598, Cl. 296-97.00K.
Gee, Colin, to Flexitallic Gaskets Limited. Gaskets. 4,364,982, Cl. 428-65.000.
Geeting, Marvin D., to States Engineering Corporation. Hole cleaning device for augers. 4,364,441, Cl. 175-84.000.
Geisendorfer, Charles E. Vehicle protective deflector having visual enhancement and illuminating means. 4,364,596, Cl. 296-91.000.
Gemignani, Francois: *See—*
Chabat-Courrede, Jean; and Gemignani, Francois, 4,364,541, Cl. 251-83.000.
Gemmel, John F. Hockey stick practice weight. 4,364,560, Cl. 273-1.00B.
Gendron, Rejean. Fuel vaporizer for internal combustion engine. 4,364,365, Cl. 123-557.000.
General Electric Company: *See—*
Archer, William R., 4,365,171, Cl. 307-253.000.
Cooper, Glenn D.; and Katchman, Arthur, 4,365,038, Cl. 260-29.1SB.
Cooper, Glenn D.; and Katchman, Arthur, 4,365,042, Cl. 525-68.000.
DiMassimo, Donald V.; and May, John B., 4,365,203, Cl. 328-63.000.
Eiswerth, James E.; Lievestro, Louis; Haubert, Richard C.; and Maclin, Harvey M., 4,364,160, Cl. 29-156.80H.
Faler, Gary R.; and Mendiratta, Ashok K., 4,365,099, Cl. 568-726.000.
Lenz, Henry G., 4,365,178, Cl. 310-61.000.
Mark, Victor; and Hedges, Charles V., 4,365,098, Cl. 568-726.000.
Nathan, Bernard D., 4,365,219, Cl. 333-193.000.
Pavkovich, John M.; and Nunan, Craig S., 4,365,339, Cl. 378-015.000.
General Foods Corporation: *See—*
Waitman, Reuben H.; and Frank, Bettie M., 4,364,968, Cl. 426-639.000.
General Motors Corporation: *See—*
Berg, Morris; Schaefer, Carl F.; and Johnston, William J., 4,364,761, Cl. 55-523.000.
Blanchette, Jon A., 4,364,368, Cl. 123-568.000.
Buetemeister, Earl H., 4,364,344, Cl. 123-179.0BG.
Chen, Francis H.; Feldmaier, Douglas A.; and Hamburg, James A., 4,364,260, Cl. 73-35.000.
Dickman, John E.; and Donley, William B., 4,364,165, Cl. 29-571.000.
Donley, William B., 4,364,167, Cl. 29-576.00B.
Licata, Joseph P.; and Ricker, Dennis J., 4,365,180, Cl. 310-216.000.
Malik, Marvin J., 4,364,343, Cl. 123-179.00B.
Reider, Samuel B., 4,364,522, Cl. 239-399.000.
Rogers, Lloyd W., Jr.; and Winnale, James A., 4,364,584, Cl. 280-802.000.
Romblom, Edward R.; and Sundeen, Arthur R., 4,364,351, Cl. 123-357.000.
General Signal Corp.: *See—*
Janvrin, Robert B.; and Bowden, Charles J., 4,364,621, Cl. 339-59.00M.
Sibley, Henry C., 4,365,164, Cl. 250-551.000.
Sibley, Henry C.; and Rutherford, David B., Jr., 4,365,298, Cl. 364-426.000.
Genini, Maurice; Athe, Christian; and Aubert, Jean-Paul, to Coflexip. Flexible tubular conduit. 4,364,418, Cl. 138-103.000.
Gentile, Carmine; and Kucharewski, Nicholas, to RCA Corporation. Gated oscillator including initialization apparatus for enhancing periodicity. 4,365,212, Cl. 331-111.000.
Georg Fischer Aktiengesellschaft: *See—*
Gut, Karl; Voegeli, Marcel; and Schneider, Haiko, 4,364,879, Cl. 264-22.000.
Reich, Fritz; and Thalmann, Alfred, 4,365,144, Cl. 219-535.000.
Georgia-Pacific Corporation: *See—*
Wise, Robert J., 4,364,555, Cl. 271-308.000.
Gerber Garment Technology, Inc.: *See—*
Pearl, David R., 4,364,330, Cl. 118-697.000.
Gerfast, Sten R., to Minnesota Mining and Manufacturing Company. Stretched-film optical recording disc. 4,365,257, Cl. 346-135.100.
Gergek, Franc. Encoder for machine control. 4,365,152, Cl. 250-231.0SE.
Gerhold, Clarence G., to UOP Inc. Exhaust emissions control system. 4,364,356, Cl. 123-440.000.
Germann, Alfred: *See—*
Boller, Arthur; Germann, Alfred; Schadt, Martin; and Villiger, Alois, 4,364,838, Cl. 252-299.610.

Gernelle, Francois, to Compagnie Internationale Pour l'Informatique CII-Honeywell Bull. Printer having a linear motor. 4,364,681, Cl. 400-322.000.

Gerry, Martin E. High energy modulation ignition system. 4,365,186, Cl. 315-209.00R.

Gesellschaft fur Strahlen-und Umweltforschung mbH: *See*—
Unsold, Eberhard; Renner, Gerhard; and Wechsung, Reiner, 4,365,157, Cl. 250-282.000.

Gewerkschaft Eisenhutte Westfalia: *See*—
Temme, Helmut, 4,364,470, Cl. 198-735.000.

Geyer, Charles J., Jr.; and White, Ben E., to Fiber Associates, Inc. Process for preparing a cotton-like rayon fiber. 4,364,889, Cl. 264-188.000.

Geyer, Fred: *See*—
Wittern, Hans-Dieter; and Geyer, Fred, 4,364,511, Cl. 229-63.000.

Geyer, Frederick F.; and Leonard, Eric M., to Eastman Kodak Company. Optical disc unit, fabrication method and cooperating write and/or read apparatus. 4,365,258, Cl. 346-137.000.

Gheewala, Tushar R., to International Business Machines Corporation. Superconductive latch circuit. 4,365,317, Cl. 365-162.000.

Gilain, Jacques: *See*—
Vanlautem, Noel; and Gilain, Jacques, 4,365,088, Cl. 562-579.000.

Gilardini S.p.A.: *See*—
Tamburini, Pierluigi, 4,364,607, Cl. 297-452.000.

Gill, Robert E. Party game. 4,364,561, Cl. 273-1.00G.

Gillespie, Ronald G.: *See*—
Woodle, Robert A.; and Gillespie, Ronald G., 4,364,262, Cl. 73-53.000.

Gillessen, Klaus; Rinderle, Heinz; Schairer, Werner; Siegle, Martin; and Malinowski, Christoph, to Licentia Patent-Verwaltungs-GmbH. Arrangement for displaying images using light emitting diodes. 4,365,244, Cl. 340-782.000.

Ginalski, Pierre: *See*—
Gagnebin, Pierre-Luc; and Ginalski, Pierre, 4,364,668, Cl. 368-80.000.

Ginter, Sally P.: *See*—
Pawloski, Chester E.; and Ginter, Sally P., 4,365,026, Cl. 521-168.000.

Girault, Pierre: *See*—
Martel, Jacques; Tessier, Jean; Girault, Pierre; and Grandadam, Jean A., 4,364,928, Cl. 424-79.000.

Glaenzer Spicer: *See*—
Mangiavacchi, Jacques, 4,364,613, Cl. 308-184.00R.

Glaser, Herbert P.: *See*—
Glaser, Walter; and Glaser, Herbert P., 4,364,454, Cl. 187-57.000.

Glaser, Walter; and Glaser, Herbert P., to G.A.L. Manufacturing Corporation. Vehicle door lock for limiting door opening to specified vehicle positions. 4,364,454, Cl. 187-57.000.

Glass, John P.: *See*—
Hollander, Edward F., Jr., 4,364,474, Cl. 206-219.000.

Gliem, Ralf; and Brandt, Reinhard, to Degussa AG; and Schoeller & Co., Elektronik GmbH. Process for the production of adhesive metal layers on non-conductors especially synthetic resins. 4,364,792, Cl. 156-628.000.

Gobel, Armin: *See*—
Patzschke, Hans-Peter; and Gobel, Armin, 4,364,860, Cl. 525-127.000.

Goddard, Michael L.: *See*—
Brady, Michael B. C.; and Goddard, Michael L., 4,365,185, Cl. 315-39.690.

Godsey, Ernest E., to Burr-Brown Research Corp. Electronic device package. 4,364,618, Cl. 339-17.0LC.

Goeth, Hanns: *See*—
Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, 4,364,944, Cl. 424-246.000.

Goff, James R. Apparatus for separating abrasive blasting media from debris. 4,364,823, Cl. 209-135.000.

Golde, Erich. Child proof screw cap. 4,364,483, Cl. 215-218.000.

Goldsmith, Herbert, to Chemed Corporation. Self alarming four double electrodes conductivity cell. 4,365,200, Cl. 324-449.000.

Goldstein, Gideon: *See*—
Kung, Patrick C.; and Goldstein, Gideon, 4,364,932, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,364,933, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,364,934, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,364,935, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,364,936, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,364,937, Cl. 424-85.000.

Golik, Jerzy J.: *See*—
Falkowski, Leonard S.; Stefanska, Barbara J.; Troka, Elzbieta; Golik, Jerzy J.; and Borowski, Edward, 4,365,058, Cl. 536-6.500.

Golinelli, Guido: *See*—
Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,364,177, Cl. 33-147.00K.

Golovchenko, Jene A.; and Levesque, Richard A., to Bell Telephone Laboratories, Incorporated. Tunable $\theta-2\theta$ device. 4,365,156, Cl. 378-84.000.

Gomibuchi, Reizo: *See*—
Tomibe, Shinji; Gomibuchi, Reizo; and Takahashi, Kiyofumi, 4,364,739, Cl. 8-654.000.

Goodboy, Kenneth P., to Aluminum Company of America. Method of producing an activated alumina Claus catalyst. 4,364,858, Cl. 252-463.000.

Goodwin, Walter A., to Cawm-Crete International Limited. Fire door construction. 4,364,987, Cl. 428-192.000.

Goodyear Tire & Rubber Company, The: *See*—
Becht, Cletus A.; Krishnan, Ramamoorthy M.; and Hogan, James M., 4,364,887, Cl. 264-171.000.
Chung, Daniel A.; and Lawrence, John P., 4,365,051, Cl. 528-64.000.
Love, Robert R., Jr.; and Leatherman, Elbert W., 4,364,267, Cl. 73-146.000.
Massey, Fred L.; and Callander, Douglas D., 4,365,031, Cl. 524-88.000.
Pesata, Patrick J., Jr.; Frerking, Harlan W., Jr.; and Bletso, Nelson C., 4,365,046, Cl. 525-438.000.
Senyek, Michael L.; and Costanza, Albert J., 4,365,027, Cl. 523-332.000.
Shelley, Lawrence E., 4,365,078, Cl. 560-94.000.

Goott, Joseph, to Tropic Industries, Inc. Poker-keno game. 4,364,567, Cl. 273-237.000.

Gorbatov, Vasily M.; Spirin, Evgeny T.; Shakhov, Vladimir V.; Vagin, Viktor V.; Khromov, Vyacheslav I.; Bogushev, Zimel A.; Eremin, Viktor I.; Vainzof, Kaletta M.; and Podkhvatilin, Evgeny R. Sausage production line. 4,364,309, Cl. 99-352.000.

Gordon Fell Limited: *See*—
Scott, William A., 4,364,205, Cl. 52-4.000.

Gosteli, Jacques: *See*—
Ernest, Ivan; Gosteli, Jacques; and Woodward, Robert B., 4,364,865, Cl. 260-239.00A.

Gottlieb, Theodore, to Hydril Company. Zone refinement of inertia welded tubulars to impart improved corrosion resistance. 4,365,136, Cl. 219-121.0LE.

Gough, Stanley T. D., to Rhone-Poulenc Agrochimie. N(Carboxymethyl-N-(phosphonomethyl)-5-(2-chloro-4-trifluoromethyl phenoxy)-2-nitrobenzamide and salts thereof. 4,364,767, Cl. 71-86.000.

Grady, John K.; Rice, David B.; and Rice, Paul G., to XRE Corporation. Counterweighted X-ray tube. 4,365,343, Cl. 378-181.000.

Grammer, Willibald: *See*—
Meiller, Hermann, 4,364,605, Cl. 297-306.000.

Grandadam, Jean A.: *See*—
Martel, Jacques; Tessier, Jean; Girault, Pierre; and Grandadam, Jean A., 4,364,928, Cl. 424-79.000.

Granges Nyby AB: *See*—
Nilsson, Peter; and Aslund, Christer, 4,364,162, Cl. 419-26.000.

Grasse, Hans J.: *See*—
Tolasch, Gerhard; and Grasse, Hans J., 4,364,462, Cl. 198-347.000.

Graves, Clinton G. Method of etching silicon and polysilicon substrates. 4,364,793, Cl. 156-643.000.

Graziano, Peter J.: *See*—
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,365,295, Cl. 364-200.000.

Greanias, Evon C.; and Yhap, Ernesto F., to International Business Machines Corporation. Chinese/Kanji on-line recognition system. 4,365,235, Cl. 340-146.3AC.

Greber, Gerd: *See*—
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,365,068, Cl. 548-435.000.

Green, Eugene L., to United States of America, Navy. Optical homodyne processor. 4,365,310, Cl. 364-822.000.

Green, Michael D.: *See*—
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,365,295, Cl. 364-200.000.

Green, William P.: *See*—
Hattan, Mark, 4,364,136, Cl. 10-86.00A.

Greenberg, Steve: *See*—
Johanson, Lars; Haft, Phil; Bonavita, Frank; Feldstein, George; Greenberg, Steve; and Brady, Kevin, 4,365,300, Cl. 364-474.000.

Greenway, John M.; and Stokes, Jimmy L., to Milliken Research Corporation. Apparatus for heated pressurized fluid stream treatment of substrate material. 4,364,156, Cl. 26-2.00R.

Greig, David A.: *See*—
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,365,295, Cl. 364-200.000.

Grenier, Michel: *See*—
Dalibout, Georges; and Grenier, Michel, 4,364,305, Cl. 92-63.000.

Griat, Jacqueline; Zabotto, Arlette; and Koulbanis, Constantin, to Societe Anonyme dite: L'OREAL. Cosmetic or pharmaceutical compositions in the form of stable oil-in-water emulsions. 4,364,930, Cl. 424-81.000.

Griffin, Freddie, Jr.: *See*—
Svatek, Katherine H.; Wilson, David A.; and Griffin, Freddie, Jr., 4,364,871, Cl. 260-439.00R.

Griffith Laboratories, Limited, The: *See*—
Darley, Kenneth S.; Fenn, Michael A. F.; and Dyson, David V., 4,364,961, Cl. 426-19.000.

Grimes, Mark F.; and Reinhart, Theodore J., Jr., to United States of America, Air Force. Acetylene-terminated polyimide compositions. 4,365,034, Cl. 524-256.000.

Grimes, Patrick G.; and Bellows, Richard J., to Exxon Research & Engineering Co. Method of improving the ion selectivity of membranes. 4,365,009, Cl. 429-50.000.

Grisham, James S., Jr., to Forney Engineering Company. Industrial control system with distributed computer implemented logic. 4,365,297, Cl. 364-200.000.

Griswold Controls: *See—*
Griswold, David E.; and Veit, Richard E., 4,364,408, Cl. 137-107.000.

Griswold, David E.; and Veit, Richard E., to Griswold Controls. Backflow prevention apparatus. 4,364,408, Cl. 137-107.000.

Gronlykke, Sven. Self-propelled irrigator. 4,364,518, Cl. 239-191.000.

Grosserhode, Josef: *See—*
Tuchenhagen, Jurgen; Roiner, Franz; and Grosserhode, Josef, 4,364,962, Cl. 426-41.000.

Grove Valve and Regulator Company: *See—*
Chow, Peter C. M., 4,364,410, Cl. 137-489.000.

Groves, Stanley E.: *See—*
Harrington, Wayne D.; and Groves, Stanley E., 4,365,210, Cl. 331-1.00A.

Grunert, Margarete; Schmid, Karl; and Tesmann, Holger, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaa). Prevention of foam in alkaline cleansing bath by the use of mixed formals of polyglycol ethers. 4,364,777, Cl. 134-29.000.

Gugliermotte, Francis: *See—*
Clement, Rene; and Gugliermotte, Francis, 4,364,877, Cl. 264-1.200.

Guild, John R.: *See—*
Daly, Robert C; and Guild, John R., 4,365,019, Cl. 430-190.000.

Gulf Research & Development Company: *See—*
Marcelin, George; Vogel, Roger F.; and Swift, Harold E., 4,365,095, Cl. 568-462.000.
Morganson, Neal E.; and Bercik, Paul G., 4,365,105, Cl. 585-525.000.

Gunter, Barbara A. Camper door and shower system. 4,364,133, Cl. 4-617.000.

Gurnov, Nikolai I.: *See—*
Tarasov, Nikolai M.; Varukha, Nikolai A.; Brontman, Rostislav L.; Slesarev, Boris A.; Zhukov, Anatoly M.; Mizik, Valery V.; Rogachev, Evgeny P.; and Gurnov, Nikolai I., 4,365,137, Cl. 219-137.310.

Gut, Karl; Voegeli, Marcel; and Schneider, Haiko, to Georg Fischer Aktiengesellschaft. Method for forming a coated article including ultra-violet radiation of the coating. 4,364,879, Cl. 264-22.000.

Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., to Hoffmann-La Roche Inc. Chlorocitric acids. 4,365,070, Cl. 549-263.000.

Guttman, Murray M., to Envirotech Corporation. Hydraulic filter plate shifter. 4,364,827, Cl. 210-225.000.

H. & P. Kaas System Teknik ApS: *See—*
Byckling, Eero, 4,365,256, Cl. 346-108.000.

Haapala, Ray. Cultivating tool. 4,364,437, Cl. 172-349.000.

Haendle, Joerg, to Siemens Aktiengesellschaft. X-Ray diagnostic installation comprising a solid state image converter. 4,365,269, Cl. 358-111.000.

Haft, Phil: *See—*
Johanson, Lars; Haft, Phil; Bonavita, Frank; Feldstein, George; Greenberg, Steve; and Brady, Kevin, 4,365,300, Cl. 364-474.000.

Hague, Louise D.: *See—*
Schneider, Abraham; Khelghatian, Habet M.; Hague, Louise D.; and Jezl, James L., 4,365,045, Cl. 525-247.000.

Hahn, Norbert, to Rite-Hite Corporation. Releasable locking device. 4,364,137, Cl. 14-71.300.

Haifa Chemicals Ltd.: *See—*
Manor, Shalom; Bar-Guri, Moshe; Alexandron, Amiad; and Kreisel, Moshe, 4,364,914, Cl. 423-399.000.

Haines, Daniel W., to University of South Carolina, The. Construction material for stringed musical instruments. 4,364,990, Cl. 428-218.000.

Haines, Kenneth A., to Eidetic Images, Inc. Method and system for constructing a composite hologram. 4,364,627, Cl. 350-3.760.

Hallam, Delbert W. Roping training aid. 4,364,570, Cl. 273-338.000.

Hallford, Ben R., to Rockwell International Corporation. Low frequency converter with diode pair mixer. 4,365,350, Cl. 455-330.000.

Halliburton Company: *See—*
Szarka, David D., 4,364,430, Cl. 166-214.000.

Halmshaw, Raymond P., to Lucas Industries Limited. Direction indicator systems for vehicles. 4,365,233, Cl. 340-73.000.

Halpern, Yuval; and Mott, Donna M., to Borg-Warner Corporation. Flame-retardant polymer compositions containing metal or amine salts. 4,365,033, Cl. 524-118.000.

Halstead, Kenneth G.; Benbow, Eugene C.; and Coyle, Forrest E., to Westinghouse Electric Corp. Convertible multirate dial register for energy consumption meters. 4,365,194, Cl. 324-116.000.

Hamada, Eizi: *See—*
Yamamoto, Yasunobu; Sakabe, Toshiaki; and Hamada, Eizi, 4,364,997, Cl. 428-372.000.

Hamada, Yoshikazu, to Mitsui Kinzoku Kogyo Kabushiki Kaisha. Automobile door locking apparatus with cancellation mechanisms. 4,364,590, Cl. 292-336.300.

Hamburg, James A.: *See—*
Chen, Francis H.; Feldmaier, Douglas A.; and Hamburg, James A., 4,364,260, Cl. 73-35.000.

Hammill, S. Scott, to SGL Industries, Inc. Solderless universal outlet. 4,364,623, Cl. 339-126.0RS.

Hammond, Edwin E.: *See—*
Donato, Guido A.; Hammond, Edwin E.; and Mullowney, Robert A., 4,364,444, Cl. 180-65.00R.

Handke, Gunther: *See—*
Wossner, Felix; and Handke, Gunther, 4,364,457, Cl. 188-322.170.

Handotai Kenkyu Shinkokai: *See—*
Nishizawa, Junichi, 4,365,262, Cl. 357-31.000.

Hannah, Robert W.; Coates, John P.; Savitzky, Abraham; Ford, Michael A.; and Carter, Harry V., to Perkin-Elmer Corporation, The. Method and apparatus for determining the nature of an unknown chemical substance. 4,365,303, Cl. 364-498.000.

Hannula, Donald L.: *See—*
Redmond, Russell J.; and Hannula, Donald L., 4,364,395, Cl. 604-10.000.

Hansen, Kenneth A.; and Chapman, Ronald H., to Motorola Inc. Low frequency astable oscillator having switchable current sources. 4,365,213, Cl. 331-113.00R.

Hansen, Kirsten: *See—*
Terrell, Ross C.; and Hansen, Kirsten, 4,365,097, Cl. 568-684.000.

Hansman, Robert J., Jr. Microwave ice prevention system. 4,365,131, Cl. 219-10.55M.

Haque, Yusuf A., to American Microsystems, Inc. Offset compensation for switched capacitor integrators. 4,365,204, Cl. 328-127.000.

Harada, Seiki: *See—*
Mukai, Kiichiro; Harada, Seiki; Muramatsu, Shin-ichi; Hiraiwa, Atsushi; Takahashi, Shigeru; Usami, Katsuhisa; Iwata, Seiichi; Ito, Satoru; and Yoshimi, Takeo, 4,365,264, Cl. 357-54.000.

Harato, Takuo: *See—*
Yamada, Koichi; Harato, Takuo; Kato, Hisakatsu; and Shiozaki, Yasumi, 4,364,919, Cl. 423-629.000.

Harbour, John M.: *See—*
Burns, Donald L.; Harbour, John M.; and Lister, James J., 4,364,831, Cl. 210-298.000.

Harco Corporation: *See—*
Weldon, Clark P.; Wolfson, Stephen L.; and Miller, Marvin L., 4,365,191, Cl. 324-71.00R.

Hardt, Udo: *See—*
Schippers, Heinz; Branscheid, Werner; Lenk, Erich; and Hardt, Udo, 4,364,717, Cl. 417-407.000.

Hardy, Raymond S. Hitch pin. 4,364,698, Cl. 411-351.000.

Harford, Jack R., to RCA Corporation. Gain-controlled amplifier using a controllable alternating-current resistance. 4,365,208, Cl. 330-278.000.

Hargreaves, Neil G., to Lever Brothers Company. Cocoabutter replacement fat compositions. 4,364,868, Cl. 260-410.700.

Harkins, Thomas G.; and Peterson, Robert D., to Nelson-Harkins Industries, Inc. Directory display. 4,364,616, Cl. 312-223.000.

Harper, Robert S.: *See—*
Norwood, Robert F.; and Harper, Robert S., 4,364,405, Cl. 135-70.000.

Harrington, Wayne D.; and Groves, Stanley E., to Motorola, Inc. Data and clock recovery system having a phase-locked-loop and which controls dynamic loop response of a data stream of unknown data format. 4,365,210, Cl. 331-1.00A.

Harris Corporation: *See—*
McRae, Daniel D.; Clark, George C.; and Szuchy, Nicholas C., 4,365,338, Cl. 375-12.000.

Harris, Seth O.: *See—*
Crutchfield, E. Bryant; Wright, Richard F.; Adair, Paul C.; Harris, Seth O.; Shackle, Dale R.; and Williams, Dennis L., 4,365,018, Cl. 430-139.000.

Harwell, Kenneth E., to Cook Paint and Varnish Company. Process for the preparation of methacrylamide from methylmethacrylate. 4,365,092, Cl. 564-135.000.

Hasbro Industries, Inc.: *See—*
Cassagnes, Andre J.; and Dudley, Irving C., 4,364,176, Cl. 33-18.00R.

Hasegawa, Shumpei: *See—*
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,364,359, Cl. 123-440.000.

Hasegawa, Wataru: *See—*
Iwata, Hiroshi; and Hasegawa, Wataru, 4,364,652, Cl. 354-197.000.

Hashimoto Forming Kogyo Co., Ltd.: *See—*
Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, 4,364,608, Cl. 301-37.0SS.

Hashimoto, Mitsuru: *See—*
Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Sasaki, Masaomi, 4,365,014, Cl. 430-59.000.

Hashimoto, Yoshinobu: *See—*
Kiyoki, Mamoru; Endo, Hiroyoshi; Naruchi, Tatsuyuki; and Hashimoto, Yoshinobu, 4,364,941, Cl. 424-236.000.

Hattan, Mark, to Green, William P., a part interest. Formation of threaded elements having a self-locking action. 4,364,136, Cl. 10-86.00A.

Hattori, Mitsuhiro; Fujii, Tomoo; and Kono, Hiroya, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Swash plate type compressor. 4,364,306, Cl. 92-71.000.

Haub, Donald J.: *See—*
Hawkins, Raymond C.; Seim, Howard N.; and Haub, Donald J., 4,365,189, Cl. 318-284.000.

Hauber, Peter. Safety vehicle sun roof lock and support apparatus. 4,364,600, Cl. 296-218.000.

Haubert, Richard C.: *See—*
Eiswerth, James E.; Lievestro, Louis; Haubert, Richard C.; and Maclin, Harvey M., 4,364,160, Cl. 29-156.80H.

Haughton, Geoffrey J. S.; and Bimpson, Malcolm, to Dunlop Limited. Inflatable marine craft having improved towing characteristics. 4,364,734, Cl. 441-37.000.

Hauni-Werke Korber & Co. KG: *See—*
Komossa, Werner; and Elsner, Uwe, 4,364,402, Cl. 131-311.000.
Komossa, Werner; and von Wichert, Nils, 4,364,549, Cl. 271-1.000.

Hauni-Werke Korber & Co. K.G.: *See*—
Tolasch, Gerhard; and Grasse, Hans J., 4,364,462, Cl. 198-347.000.
Hawkins, Raymond C.; Seim, Howard N.; and Haub, Donald J., to Tennant Company. Control circuit for reversible electric motors. 4,365,189, Cl. 318-284.000.
Hayasaka, Toshimi, to Olympus Optical Co., Ltd. Automatic focusing device for microscopes. 4,364,630, Cl. 350-518.000.
Hayashi, Dan: *See*—
Couture, Maurice J.; and Hayashi, Dan, 4,365,102, Cl. 570-163.000.
Hayashi, Steven J.: *See*—
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,365,295, Cl. 364-200.000.
Hayashi, Yukichi; Tamura, Masauuki; Sugimoto, Osamu; Takizawa, Masayoshi; Nishioka, Tatsujiro; Akagawa, Masaki; and Yokohda, Yutaka, to Kabushiki Kaisha Nippon Coicno. Inventory device in automatic vending machine. 4,364,404, Cl. 133-4.00A.
Hayes, John C.: *See*—
Castillo, Carmen; and Hayes, John C., 4,364,848, Cl. 252-417.000.
Heald, Anthony F.; and Wildonger, Richard A., to ICI Americas Inc. Pyrazolo[3,4-b]pyridine compounds. 4,364,948, Cl. 424-256.000.
Heberlein Hispano SA: *See*—
Vignon, Louis, 4,364,223, Cl. 57-5.000.
Heckrotte, John R., Sr., to Cactus Technology Corp. Method for making a key for driving tamper-proof bolt. 4,364,287, Cl. 76-101.00D.
Hedges, Charles V.: *See*—
Mark, Victor; and Hedges, Charles V., 4,365,098, Cl. 568-726.000.
Heemskerk, Jacobus P. J.; Immink, Kornelis A.; and Simons, Carel A. J., to U.S. Philips Corporation. Optic read unit for scanning a record carrier having a radiation-reflecting information structure. 4,365,323, Cl. 369-44.000.
Hein, Norman W., Jr.: *See*—
House, Horace F.; Peterson, Marvin L.; and Hein, Norman W., Jr., 4,365,306, Cl. 364-551.000.
Heinzl, Alfred; and Stadler, Heinz, to Siemens Aktiengesellschaft. Device for pneumatically scanning the level of liquid in a container. 4,364,270, Cl. 73-298.000.
Heitmann, Jurgen, to Robert Bosch GmbH. Method for the time correction of a digital switching signal. 4,365,308, Cl. 364-577.000.
Heldor Associates, Inc.: *See*—
Arp, George F.; and Nichols, James M., 4,364,211, Cl. 52-245.000.
Helwig, Michael W., Jr.: *See*—
Niemond, Larry A.; Helwig, Michael W., Jr.; and Connare, Thomas J., 4,364,772, Cl. 75-126.00R.
Helzer, James A., to Unicover Corporation. Adjustable plate holder. 4,364,537, Cl. 248-448.000.
Hemmerich, Johann, to Kernforschungsanlage Julich GmbH. Helium-cooled cold surface, especially for a cryopump. 4,364,235, Cl. 62-55.500.
Hendrix Electronics, Inc.: *See*—
Henrichon, Ernest G., Jr., 4,365,234, Cl. 340-146.3SY.
Henis, Jay M. S.: *See*—
Brooks, Albert A.; Henis, Jay M. S.; and Tripodi, Mary K., 4,364,759, Cl. 55-487.000.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Ziche, Horst, 4,364,836, Cl. 252-135.000.
Henkel Kommanditgesellschaft auf Aktien (Henkel KGaa): *See*—
Grunert, Margarete; Schmid, Karl; and Tesmann, Holger, 4,364,777, Cl. 134-29.000.
Hennessey, John M.: *See*—
Pagano, Victor H.; and Hennessey, John M., 4,364,300, Cl. 89-36.00A.
Henrichon, Ernest G., Jr., to Hendrix Electronics, Inc. Segmentation system and method for optical character scanning. 4,365,234, Cl. 340-146.3SY.
Hense, Karl H.: *See*—
Brucher, Walter; Hense, Karl H.; and Modtler, Reiner, 4,364,983, Cl. 428-85.000.
Hepp, Dennis G.: *See*—
Citron, Paul; Hepp, Dennis G.; and Jirak, Thomas L., 4,364,397, Cl. 128-710.000.
Heraeus Elektroden GmbH: *See*—
Fabian, Peter; Eisenhuth, Karlheinz; Jedlitschka, Ernst; and Krebs, Helmut, 4,364,811, Cl. 204-220.000.
Herberts GmbH: *See*—
Mass, Manfred; and Walter, Gunter, 4,364,980, Cl. 428-35.000.
Patzschke, Hans-Peter; and Gobel, Armin, 4,364,860, Cl. 525-127.000.
Hercules Incorporated: *See*—
Liu, Chia-Seng, 4,365,044, Cl. 525-240.000.
Hershey, Lowell E., to Durametallic Corporation. Tapered seal seat between stationary insert and gland. 4,364,571, Cl. 277-86.000.
Hess, Joachim. Heated instrument-mounting plate. 4,365,138, Cl. 219-200.000.
Hesselink, Frans T.: *See*—
Saidi, Ali M.; and Hesselink, Frans T., 4,364,431, Cl. 166-275.000.
Hetra, Andrew A., Jr.; and Jacob, Charles W., to United States Steel Corporation. Apparatus for co-ordinating indexing movement of a conveyor with pivoting of a kickout arm adjacent the delivery end thereof. 4,364,468, Cl. 198-489.000.
Hetyey nee Papp, Maria: *See*—
Takacs, Kalman; Kiss nee Ajzert, Ilona; Simay, Antal; Literati Nagy, Peter; Hetyey nee Papp, Maria; Ecsery nee Puskas, Marian; Szekeres, Laszlo; Papp, Gyula; Viragh, Sandor; and Udvardy, Eva, 4,365,064, Cl. 546-148.000.
Hetz, G. Brian, to Dayco Corporation. Pulley and method of making same. 4,364,736, Cl. 474-168.000.
Heubner, Ulrich: *See*—
von Ropenack, Adolf; Stock, Gunter; and Heubner, Ulrich, 4,364,807, Cl. 204-114.000.
Higton, Malcolm; and Vecht, Aron, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Phosphors. 4,365,184, Cl. 313-503.000.
Higuchi, Noboru; Yano, Teruo; and Ohnishi, Masahiro, to NGK Insulators, Ltd. Ceramic honeycomb filter. 4,364,760, Cl. 55-523.000.
Hikita, Mitsutaka, to Hitachi, Ltd. Surface wave circuit device. 4,365,220, Cl. 333-195.000.
Hill, Richard N., to W. R. Grace & Co. Post precipitation control of low-iron phosphoric acid, without perlite. 4,364,912, Cl. 423-321.00R.
Hilliard, David R. Mud saver valve. 4,364,407, Cl. 137-71.000.
Hinrichs, Lansing M.: *See*—
Fahrig, Robert J.; and Hinrichs, Lansing M., 4,364,905, Cl. 422-144.000.
Hirabayashi, Yuzi: *See*—
Tsuzuki, Yoshihiko; Hirabayashi, Yuzi; Shirasaki, Shinji; Matsuyama, Masahiro; and Okazaki, Hiroshi, 4,364,513, Cl. 236-49.000.
Hiraike, Fumiaki, to Konishiroku Photo Industry Co., Ltd. Exposure ascertaining device for cameras. 4,364,651, Cl. 354-31.000.
Hiraiwa, Atsushi: *See*—
Mukai, Kiichiro; Harada, Seiki; Muramatsu, Shin-ichi; Hiraiwa, Atsushi; Takahashi, Shigeru; Usami, Katsuhisa; Iwata, Seiichi; Ito, Satoru; and Yoshimi, Takeo, 4,365,264, Cl. 357-54.000.
Hiramatsu, Uji: *See*—
Nakagawa, Tsuneo; Hiramatsu, Uji; and Honda, Toshihide, 4,365,101, Cl. 570-145.000.
Hirohata, Michio: *See*—
Mamiya, Toshiharu; Yamada, Tateo; Hirohata, Michio; Ogawa, Yukio; and Kimura, Hiroyuki, 4,364,649, Cl. 354-25.000.
Hirose, Ryusho: *See*—
Tanaka, Kazuo; and Hirose, Ryusho, 4,364,642, Cl. 350-429.000.
Hirsch, Gerhard, to E. C. H. Will (GmbH & Co.). Rotary knife holder with means for damping its natural frequency oscillations. 4,364,293, Cl. 83-674.000.
Hitachi Denshi Kabushiki Kaisha: *See*—
Fukuchi, Satoshi, 4,365,207, Cl. 330-260.000.
Hitachi, Ltd.: *See*—
Fukunaga, Yasushi; and Bandoh, Tadaaki, 4,365,311, Cl. 364-900.000.
Hikita, Mitsutaka, 4,365,220, Cl. 333-195.000.
Ishioka, Sachio; Maruyama, Eiichi; Imamura, Yoshinori; Matsubara, Hirokazu; and Horigome, Shinkichi, 4,365,013, Cl. 430-57.000.
Karino, Kimiji, 4,364,355, Cl. 123-438.000.
Kawagoe, Hiroto, 4,365,263, Cl. 357-45.000.
Koike, Norio; Baji, Toru; Tsukada, Toshihisa; and Yamamoto, Hideaki, 4,364,973, Cl. 427-75.000.
Kosuge, Tokuo; Atago, Takeshi; and Karino, Kimiji, 4,364,354, Cl. 123-437.000.
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Suzuki, Mituo; and Nakamura, Kenji, 4,365,220, Cl. 340-825.320.
Matsuyama, Shigeru; and Sasaki, Ken, 4,364,168, Cl. 29-592.00R.
Mukai, Kiichiro; Harada, Seiki; Muramatsu, Shin-ichi; Hiraiwa, Atsushi; Takahashi, Shigeru; Usami, Katsuhisa; Iwata, Seiichi; Ito, Satoru; and Yoshimi, Takeo, 4,365,264, Cl. 357-54.000.
Noguchi, Atomi; Ide, Jushi; Kuwahara, Hiroshi; and Miyazaki, Yoshihiro, 4,365,309, Cl. 364-702.000.
Ohtsu, Eiichi; and Shibata, Takanori, 4,364,428, Cl. 165-11.00R.
Oi, Tetsu; Takagi, Kazumasa; and Fukazawa, Tokuumi, 4,365,155, Cl. 378-49.000.
Okuhara, Shinji, 4,365,170, Cl. 307-252.00A.
Oshima, Masabumi; Honda, Haruo; and Takahashi, Takeshi, 4,365,126, Cl. 200-144.0AP.
Shibuya, Yoshimichi; Takahashi, Masami; and Ishibashi, Tadashi, 4,364,672, Cl. 368-240.000.
Shimazoe, Michitaka; Matsuoka, Yoshitaka; Akahane, Ryozo; Shimizu, Yasushi; Nemoto, Hideyuki; and Tanabe, Masanori, 4,364,276, Cl. 73-721.000.
Hitachi Maxell, Ltd.: *See*—
Andoh, Haruo; Kitaoka, Susumu; Sueyoshi, Toshinobu; Ishida, Hikaru; and Kato, Akira, 4,364,988, Cl. 428-212.000.
Hitachi Shipbuilding & Engineering Company Limited: *See*—
Endo, Takuro; Tomita, Yukio; Okamoto, Yukiro; Imaoka, Hiroshi; and Sakiyama, Michio, 4,364,257, Cl. 72-405.000.
Hjellum, Jerry: *See*—
Moss, Theron C.; Mullan, Richard; Boring, Earl; Hjellum, Jerry; and Christison, Alexander, 4,364,144, Cl. 15-229.0AC.
Hocker, Jurgen; and Ranz, Erwin, to Agfa-Gevaert Aktiengesellschaft. Light sensitive recording material. 4,365,012, Cl. 430-19.000.
Hodogaya Chemical Co., Ltd.: *See*—
Motohashi, Katsuichi; Obara, Toshio; Kaneko, Kazuo; and Yamaguchi, Masahiko, 4,364,999, Cl. 428-411.000.
Hoek, Gijsberk T. Production of immunogenic products and treatment of allergic reactions therewith. 4,364,938, Cl. 424-88.000.
Hoell, John W.: *See*—
Baker, Paul A.; and Hoell, John W., 4,364,625, Cl. 339-183.000.
Hofer, Gerald: *See*—
Eheim, Franz; and Hofer, Gerald, 4,364,360, Cl. 123-450.000.

Hoffmann-La Roche Inc.: *See*—
Boller, Arthur; Germann, Alfred; Schadt, Martin; and Villiger, Alois, 4,364,838, Cl. 252-299.610.
Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,365,070, Cl. 549-263.000.

Hofmann, Peter: *See*—
Muller, Wolfgang H. E.; and Hofmann, Peter, 4,364,869, Cl. 260-410.90R.

Hofstetter, Edward G., Jr.: *See*—
Parkison, Richard G.; and Hofstetter, Edward G., Jr., 4,364,523, Cl. 239-533.140.

Hogami, Toshihiko: *See*—
Umemura, Sumio; Ohdan, Kyoji; Sakai, Fumihiko; Suzuki, Kenichi; Bando, Yasuo; Hogami, Toshihiko; and Fuginaga, Masataka, 4,364,844, Cl. 252-435.000.

Hogan, James M.: *See*—
Becht, Cletus A.; Krishnan, Ramamoorthy M.; and Hogan, James M., 4,364,887, Cl. 264-171.000.

Holaday Industries, Inc.: *See*—
Rankin, William J.; and Whitaker, Jerome P., 4,365,192, Cl. 324-72.000.

Holcombe, W. Philip, to TRW Inc. Method for manufacturing a forged piston with reinforced ring groove. 4,364,159, Cl. 29-156.50R.

Hollander, Edward F., Jr., to Glass, John P. Packages. 4,364,474, Cl. 206-219.000.

Holley, John M., Jr.; and Oliff, James R., to Mead Corporation, The. Article carrier with dispensing feature. 4,364,509, Cl. 229-17.00B.

Holmes, Keith D., Jr.: *See*—
Sankoorikal, Varghese L.; and Holmes, Keith D., Jr., 4,364,263, Cl. 73-61.10C.

Holmes, William K., to J. I. Case Company. Hydrostatic transmission overspeed prevention circuit. 4,364,230, Cl. 60-444.000.

Holonyak, Nick, Jr., to University of Illinois Foundation. Semiconductor light emitting device with quantum well active region of indirect bandgap semiconductor material. 4,365,260, Cl. 357-17.000.

Holtmann, Teodoro. Valve control device for an internal combustion engine. 4,364,341, Cl. 123-90.170.

Holtz, Earl B., to Pitney Bowes Inc. Serial communications bus for remote terminals. 4,365,293, Cl. 364-200.000.

Home of Champions, S.A.: *See*—
Tomar, Julius, 4,364,565, Cl. 273-60.00R.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Iizuka, Yoshitoku; and Ohkubo, Kiyokazu, 4,364,445, Cl. 180-70.00R.
Nakamura, Yukinobu; Nakajima, Tsuneo; Atsumi, Toru; and Sakai, Kunitaka, 4,364,429, Cl. 165-28.000.

Honda Giken Kogyo Kabushiki Kaisha & Showa Mfg. Co., Ltd.: *See*—
Takahashi, Noriyuki; Sakaguchi, Takumi; and Tajima, Yasutomo, 4,364,582, Cl. 280-698.000.

Honda, Haruo: *See*—
Oshima, Masabumi; Honda, Haruo; and Takahashi, Takeshi, 4,365,126, Cl. 200-144.0AP.

Honda Motor Co., Ltd.: *See*—
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,364,359, Cl. 123-440.000.

Honda, Toshihide: *See*—
Nakagawa, Tsuneo; Hiramatsu, Uji; and Honda, Toshihide, 4,365,101, Cl. 570-145.000.

Honeywell Information Systems Italia: *See*—
Zanchi, Vittorio; and Maccianti, Tiziano, 4,365,291, Cl. 364-200.000.

Hoover Company, The: *See*—
Leonatti, John A., 4,364,757, Cl. 55-357.000.

Horak, Anthony: *See*—
Fasig, Harold A.; and Horak, Anthony, 4,365,151, Cl. 250-222.00R.

Horigome, Shinkichi: *See*—
Ishioka, Sachio; Maruyama, Eiichi; Imamura, Yoshinori; Matsubara, Hirokazu; and Horigome, Shinkichi, 4,365,013, Cl. 430-57.000.

Horike, Masanori; Jinnai, Koichiro; Iwasaki, Kyuhachiro; and Kodama, Yutaka, to Ricoh Co., Ltd. Ink jet printer. 4,365,255, Cl. 346-75.000.

Horner, Jerome T.; Anthony, John; and Fraser, William A., to Union Carbide Corporation. Three layer film having a core layer of low pressure, low density polyethylene. 4,364,981, Cl. 428-35.000.

Horsewell, Henry G.; and Luke, John A., to British-American Tobacco Company Limited. Smoke filtration. 4,364,403, Cl. 131-332.000.

Horter, Hans-Dieter; Maier, Wolfgang; and Seibold, Herbert, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Assembly for monitoring torsional loading of a drive shaft. 4,364,278, Cl. 73-862.360.

Hosotani, Takashi: *See*—
Tateyama, Masayuki; and Hosotani, Takashi, 4,364,577, Cl. 280-93.000.

Hotta, Kazuyuki: *See*—
Tatsuwaki, Masao; Nemoto, Shin; Katayama, Yutaka; Okada, Michio; and Hotta, Kazuyuki, 4,365,307, Cl. 364-557.000.

House, Horace F.; Peterson, Marvin L.; and Hein, Norman W., Jr., to Conoco Inc. Method and apparatus for remotely monitoring and evaluating pile driving hammers. 4,365,306, Cl. 364-551.000.

Howe, Robert K.; and Liu, Kou-Chang, to Monsanto Company. 3'-(Substituted phenyl)-spiro[isobenzofuran-1(3H),5'(4'H)-isoxazol]-3-ones and their use as plant growth regulants. 4,364,768, Cl. 71-88.000.

Howse, Jeanette W. Method for making a breast prosthesis. 4,364,880, Cl. 264-28.000.

Hozumi, Kazuo: *See*—
Nishikawa, Kazuo; and Hozumi, Kazuo, 4,365,340, Cl. 378-039.000.

Hsu, Chao-Yang; and Kesling, Haven S., Jr., to Atlantic Richfield Company. Recovery of dimethyl sebacate from an isomeric mixture of C_{12} esters. 4,365,079, Cl. 560-191.000.

Hubert, Bernard, to Societe Nationale Industrielle Aerospatiale. Correction method for transverse defocussing of parabolic antenna. 4,365,252, Cl. 343-761.000.

Huckabay, William B.: *See*—
Thomas, David L.; Pope, William S.; and Huckabay, William B., 4,364,446, Cl. 181-120.000.

Huelle, Zbigniew R.; Nielsen, Leif; and Jakobsen, Jakob S., to Danfoss A/S. Valve for refrigeration plant. 4,364,238, Cl. 62-217.000.

Huet, Alain, to Societe d'Etudes Industrielies de Villejuif, Seiv Automation. Numerically controlled measuring device. 4,364,178, Cl. 33-174.00L.

Hughes Tool Company: *See*—
Bass, C. Joe; and Peterson, Elmer R., 4,364,432, Cl. 166-290.000.

Hull, Robert W.: *See*—
Caffy, Russell B.; Carron, Mark S.; Hull, Robert W.; Jain, Pawan K.; and Mickley, Harold S., 4,364,911, Cl. 423-317.000.

Hultmark, Ingvar O.: *See*—
Brandt, Lennart H.; Hultmark, Ingvar O.; Petersson, Lars H.; and Soderbaum, Carl U., 4,364,711, Cl. 416-142.000.

Hunt, John H.: *See*—
Cook, Peter B.; and Hunt, John H., 4,364,923, Cl. 424-46.000.

Hunter, R. Scott: *See*—
Lang, John; and Hunter, R. Scott, 4,364,490, Cl. 220-407.000.

Huntley, Ted R., to Minnesota Mining and Manufacturing Company. Connector for flat cable. 4,364,622, Cl. 339-97.00R.

Hutchings, Leroi E.; and Conner, Algie J., to UOP Inc. Conversion of asphaltene-containing charge stocks. 4,364,819, Cl. 208-96.000.

Hydril Company: *See*—
Gottlieb, Theodore, 4,365,136, Cl. 219-121.0LE.

Hyllberg, Bruce E., to American Roller Company. Impression roller with adjustable electrical characteristics and method of making the same. 4,364,313, Cl. 101-401.100.

Hynes, Frank R., to Xerox Corporation. Corrugation venturi paper feeder. 4,364,550, Cl. 271-11.000.

Ibanez-Pi, Juan: *See*—
Muns-Magem, Joaquin; and Ibanez-Pi, Juan, 4,364,247, Cl. 66-163.000.

ICI Americas Inc.: *See*—
Heald, Anthony F.; and Wildonger, Richard A., 4,364,948, Cl. 424-256.000.

Ide, Jushi: *See*—
Noguchi, Atomi; Ide, Jushi; Kuwahara, Hiroshi; and Miyazaki, Yoshihiro, 4,365,309, Cl. 364-702.000.

Idier, Jean: *See*—
Cordier, Jean; Demange, Michel; and Idier, Jean, 4,364,771, Cl. 75-58.000.

Iga, Takeo: *See*—
Tabata, Hideyo; Kuwahara, Yoshitaka; Machida, Michihide; Kume, Shyoichi; Iga, Takeo; Saitoh, Kazuo; and Tomura, Shinji, 4,365,022, Cl. 501-97.000.

Ignatievich, Shevchenko A.: *See*—
Prokofievna, Skripchik L.; Moiseevich, Shutov G.; Emmanuilovna, Erdman M.; Eduardovich, Pukhalsky M.; Ivanovich, Lezhen V.; Ignatievich, Shevchenko A.; and Vladimirovich, Vrublevsky E., 4,364,976, Cl. 427-382.000.

Iijima, Takekazu: *See*—
Soma, Hiroshi; Iyobe, Makoto; Iijima, Takekazu; and Moriyama, Yutaka, 4,365,113, Cl. 179-1.00E.

Iizuka, Yoshitoku; and Ohkubo, Kiyokazu, to Honda Giken Kogyo Kabushiki Kaisha. Transmission device for a vehicle. 4,364,445, Cl. 180-70.00R.

Ikai, Shigeru: *See*—
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,365,048, Cl. 526-128.000.

Ikeda, Hideo; and Aizawa, Hideo, to Nissan Motor Co., Ltd. Lateral drag link type steering linkage for a vehicle. 4,364,578, Cl. 280-95.00R.

Ikeda, Joe N.: *See*—
Funk, Albert G.; Wasson, Daniel A.; and Ikeda, Joe N., 4,364,782, Cl. 149-21.000.

Ikemori, Keiji, to Canon Kabushiki Kaisha. Gauss type large aperture photographic objective. 4,364,644, Cl. 350-464.000.

Ikuma, Katsumi, to Yamaha Hatsudoki Kabushiki Kaisha. Speed control for wheeled vehicles. 4,364,448, Cl. 180-206.000.

Imada, Kiyoshi; Abe, Tokuji; and Ueno, Susumu, to Shin-Etsu Chemical Co., Ltd. Method for improving surface properties of shaped articles of polyvinyl chloride resins. 4,364,970, Cl. 427-40.000.

Imamura, Yoshinori: *See*—
Ishioka, Sachio; Maruyama, Eiichi; Imamura, Yoshinori; Matsubara, Hirokazu; and Horigome, Shinkichi, 4,365,013, Cl. 430-57.000.

Imaoka, Hiroshi: *See*—
Endo, Takuro; Tomita, Yukio; Okamoto, Yukiro; Imaoka, Hiroshi; and Sakiyama, Michio, 4,364,257, Cl. 72-405.000.

Imed Corporation: *See*—
Jenkins, Jon A.; and Schwan, Herbert A., 4,364,386, Cl. 128-214.00E.

Immink, Kornelis A.: *See*—
Heemskerk, Jacobus P. J.; Immink, Kornelis A.; and Simons, Carel A. J., 4,365,323, Cl. 369-44.000.

Impex-Essen, Vertrieb von Werkzeugen GmbH: *See*—
Schneider, Fritz, 4,364,506, Cl. 227-10.000.

Inayat-Khan, Gayan, to Mattel, Inc. Interconnection system for printed circuit board devices. 4,364,619, Cl. 339-17.00F.
Indian Head Inc.: *See—*
Wozniak, Glenn A.; Rady, Robert R.; and Pate, Harold T., 4,364,292, Cl. 83-605.000.
Industrie Pirelli S.p.A.: *See—*
Sassi, Carlo; and Vicini, Antonio, 4,364,398, Cl. 128-736.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Badagnani, Guido; and Zino, Costanzo, 4,365,314, Cl. 364-900.000.
Ingersoll-Rand Company: *See—*
Dussourd, Jules L.; and Luthi, Oscar, 4,364,185, Cl. 34-122.000.
Inomata, Hiroshi: *See—*
Sato, Yasuhiko; Inomata, Hiroshi; and Okinoshima, Hiroshige, 4,364,809, Cl. 204-159.130.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,364,802, Cl. 204-23.000.
Inoue, Kiyoshi, 4,364,812, Cl. 204-224.00M.
Inoue, Kiyoshi, 4,365,133, Cl. 219-69.00M.
Inoue, Jiro, to Murata Manufacturing Co., Ltd. Three terminal type piezoelectric filter. 4,365,218, Cl. 333-187.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Scanning electrode vibration electrodeposition method. 4,364,802, Cl. 204-23.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Guide body member for a wire electrode in a wire-cutting electroerosion machine. 4,364,812, Cl. 204-224.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for electroerosively machining a 3D cavity in a workpiece. 4,365,133, Cl. 219-69.00M.
Inoue, Shigeru: *See—*
Ono, Hiroshi; Fujii, Hidetsugu; and Inoue, Shigeru, 4,365,089, Cl. 564-67.000.
Inoue, Tokuji: *See—*
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,365,048, Cl. 526-128.000.
Institut Francais du Petrole: *See—*
Beauducel, Claude; and Cretin, Jacques, 4,365,320, Cl. 367-21.000.
Laloz, Jean P.; Mimoun, Hubert; Rouxel, Jean J.; and Saussine, Lucien, 4,365,082, Cl. 560-243.000.
Instrumental Products: *See—*
Curtiss, John S., Jr., 4,364,501, Cl. 225-13.000.
International Business Machines Corp.: *See—*
Aichelmann, Frederick J., Jr.; and Bachman, Bruce E., 4,365,318, Cl. 365-200.000.
Crowder, Billy L.; and Reisman, Arnold, 4,364,166, Cl. 29-571.000.
Davis, Donald E.; Moore, Richard D.; Ryan, Philip M.; and Weber, Edward V., 4,365,163, Cl. 250-491.100.
Gheewala, Tushar R., 4,365,317, Cl. 365-162.000.
Greanias, Evon C.; and Yhap, Ernesto F., 4,365,235, Cl. 340-146.3AC.
Shakib, Iraj D.; and Yosmali, Krikor, 4,364,683, Cl. 400-637.000.
Ulmer, Siegfried W., 4,365,296, Cl. 364-200.000.
International Minerals & Chemical Corp.: *See—*
Snow, Robert E., 4,364,824, Cl. 209-167.000.
International Minerals & Chemical Luxembourg Societe Anonyme: *See—*
Lask, Gert-Wilhelm, 4,364,974, Cl. 427-213.000.
Internationale Octrooi Maatschappij "Octropa" BV: *See—*
Beun, Jacobus H.; and van Duijn, Jan, 4,364,718, Cl. 417-500.000.
Inventor Invest AB: *See—*
Persson, Nils C., 4,364,130, Cl. 4-449.000.
IRECO Chemicals: *See—*
Funk, Albert G.; Wasson, Daniel A.; and Ikeda, Joe N., 4,364,782, Cl. 149-21.000.
Irwin, Lawrence F. Pipe cleanout tool. 4,364,140, Cl. 15-104.3SN.
Ishibashi, Tadashi: *See—*
Shibuya, Yoshimichi; Takahashi, Masami; and Ishibashi, Tadashi, 4,364,672, Cl. 368-240.000.
Ishida, Hikaru: *See—*
Andoh, Haruo; Kitaoka, Susumu; Sueyoshi, Toshinobu; Ishida, Hikaru; and Kato, Akira, 4,364,988, Cl. 428-212.000.
Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,364,248, Cl. 68-5.00E.
Ishihara, Shunichi: *See—*
Kitajima, Nobuo; Ishihara, Shunichi; Nishigaki, Yuji; and Kitahara, Nobuko, 4,365,015, Cl. 430-62.000.
Ishii, Yoshiaki; Ando, Naoyoshi; Kume, Tsutomu; and Fujinami, Shosaku, to Seiichi Ishizaka, President of Agency of Industrial Science and Technology. Method and system for disposing pyrolysis gas. 4,364,796, Cl. 201-4.000.
Ishii, Yutaka: *See—*
Yasuda, Shuhei; Ishii, Yutaka; and Wada, Tomio, 4,365,242, Cl. 340-709.000.
Ishioka, Sachio; Maruyama, Eiichi; Imamura, Yoshinori; Matsubara, Hirokazu; and Horigome, Shinkichi, to Hitachi, Ltd. Electrophotographic member. 4,365,013, Cl. 430-57.000.
Istvan, Sandor: *See—*
Gado, Istvan; Jekkel nee Bokany, Antonia; Szvoboda, Gyorgy; Jarai, Miklos; Piukovich, Sandor; and Istvan, Sandor, 4,365,020, Cl. 435-80.000.
Ito, Fumio: *See—*
Kawamura, Masaharu; Sakurada, Nobuaki; Shinoda, Nobuhiko; Ito, Tadashi; Ito, Fumio; and Murakami, Hiroyashu, 4,364,647, Cl. 354-23.00D.
Ito, Massao: *See—*
Yoshida, Seietsu; Niimi, Yukihide; Ito, Massao; Sawada, Hiroshi; and Demura, Takayuki, 4,364,227, Cl. 60-276.000.
Ito, Osamu; and Nishizawa, Kazunori, to Kao Soap Co., Ltd. Two layer absorbent article with super water-absorbing polymer. 4,364,992, Cl. 428-283.000.
Ito, Satoru: *See—*
Mukai, Kiichiro; Harada, Seiki; Muramatsu, Shin-ichi; Hiraiwa, Atsushi; Takahashi, Shigeru; Usami, Katsuhisa; Iwata, Seiichi; Ito, Satoru; and Yoshimi, Takeo, 4,365,264, Cl. 357-54.000.
Ito, Tadashi: *See—*
Kawamura, Masaharu; Sakurada, Nobuaki; Shinoda, Nobuhiko; Ito, Tadashi; Ito, Fumio; and Murakami, Hiroyashu, 4,364,647, Cl. 354-23.00D.
Itoh, Hiroshi; and Kobayashi, Nobuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the idling speed of an engine. 4,364,348, Cl. 123-339.000.
Itoh, Hiroshi: *See—*
Kobayashi, Nobuyuki; and Itoh, Hiroshi, 4,364,350, Cl. 123-339.000.
Itoh, Kiyoshi; Kamoshita, Tetuo; Sakai, Teruo; and Kawasaki, Harumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Counterbalance mechanism for laser knife device. 4,364,535, Cl. 248-123.100.
Itoh, Kunio: *See—*
Sugino, Takashi; Shimizu, Hirokazu; Wada, Masaru; and Itoh, Kunio, 4,365,336, Cl. 372-45.000.
Ivani, Edward J. Amino-polysaccharides and copolymers thereof for contact lenses and ophthalmic compositions. 4,365,050, Cl. 527-312.000.
Ivanovich, Lezhen V.: *See—*
Prokofievna, Skripchik L.; Moiseevich, Shutov G.; Emmanuilovna, Erdman M.; Eduardovich, Pukhalsky M.; Ivanovich, Lezhen V.; Ignatievich, Shevchenko A.; and Vladimirovich, Vrublevsky E., 4,364,976, Cl. 427-382.000.
Ivary, David J.; and Kirby, Raymond L., Jr., to Monarch Marking Systems, Inc. Web feeding method and apparatus for a printer. 4,364,503, Cl. 226-45.000.
Iwahashi, Hiroshi; and Asano, Masamichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Multifunction terminal circuit. 4,365,316, Cl. 365-72.000.
Iwasaki, Kyuhachiro: *See—*
Horike, Masanori; Jinnai, Koichiro; Iwasaki, Kyuhachiro; and Kodama, Yutaka, 4,365,255, Cl. 346-75.000.
Iwata, Hiroshi; and Hasegawa, Wataru, to West Electric Co., Ltd. Automatic focusing camera. 4,364,652, Cl. 354-197.000.
Iwata, Seiichi: *See—*
Mukai, Kiichiro; Harada, Seiki; Muramatsu, Shin-ichi; Hiraiwa, Atsushi; Takahashi, Shigeru; Usami, Katsuhisa; Iwata, Seiichi; Ito, Satoru; and Yoshimi, Takeo, 4,365,264, Cl. 357-54.000.
Iwatsu Electric Co., Ltd.: *See—*
Kokaji, Norio; and Kinoshita, Kunio, 4,365,276, Cl. 358-301.000.
Iyobe, Makoto: *See—*
Soma, Hiroshi; Iyobe, Makoto; Iijima, Takekazu; and Moriyama, Yutaka, 4,365,113, Cl. 179-1.00E.
Izawa, Motowo: *See—*
Asai, Mitsuko; Nakahama, Kazuo; and Izawa, Motowo, 4,364,866, Cl. 260-239.30P.
J. I. Case Company: *See—*
Holmes, William K., 4,364,230, Cl. 60-444.000.
Shumaker, John F., 4,364,705, Cl. 414-713.000.
Jackson, Charles P. Multi-purpose log handling tool. 4,364,592, Cl. 294-26.000.
Jacob, Charles W.: *See—*
Hetra, Andrew A., Jr.; and Jacob, Charles W., 4,364,468, Cl. 198-489.000.
Jacobellis, A. A.; and Zahid, Abduz, to VSI Corporation. Low cost accumulator device. 4,364,416, Cl. 138-30.000.
Jacoby, Hans-Dieter: *See—*
Willhelm, Jorg; Jacoby, Hans-Dieter; Schuster, Erich; and Prinz, Dieter, 4,364,180, Cl. 33-174.00L.
Jager, Walter: *See—*
Beneke, Wolfgang; Jager, Walter; and Teichmann, Paul, 4,364,153, Cl. 19-107.000.
Jain, Pawan K.: *See—*
Caffy, Russell B.; Carron, Mark S.; Hull, Robert W.; Jain, Pawan K.; and Mickley, Harold S., 4,364,911, Cl. 423-317.000.
Jakab, Jozsef: *See—*
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Jakab, Jozsef; Kistamas, Attila; and Ujvari, Istvan, 4,364,931, Cl. 424-84.000.
Jakobsen, Jakob S.: *See—*
Huelle, Zbigniew R.; Nielsen, Leif; and Jakobsen, Jakob S., 4,364,238, Cl. 62-217.000.
James W. Gardner Enterprises, Inc.: *See—*
Black, David J., 4,364,967, Cl. 426-632.000.
Jamnik, Donald J., to Kearney & Trecker Corporation. System for multilingual communication of computer-specified aural or visual control messages in an operator-designated language. 4,365,315, Cl. 364-900.000.
Janssen Pharmaceutica N.V.: *See—*
Sipido, Victor, 4,364,942, Cl. 424-245.000.
Janvrin, Robert B.; and Bowden, Charles J., to General Signal Corp. Electrical connector. 4,364,621, Cl. 339-59.00M.
Janz, Joachim, to Gebr. Happich GmbH. Device for attaching an insertion part to a base surface. 4,364,685, Cl. 403-108.000.

Jarai, Miklos: *See*—
Gado, Istvan; Jekkel nee Bokany, Antonia; Szvoboda, Gyorgy; Jarai, Miklos; Piukovich, Sandor; and Istvan, Sandor, 4,365,020, Cl. 435-80.000.
Jarby, Sven. Device for holding X-ray-sensitive films for odontological radiographs. 4,365,162, Cl. 378-170.000.
Jean, Ming T.; and Liou, Ming T. Separate 3-cylinder system of brake fluid for automobile safety. 4,364,611, Cl. 303-84.00R.
Jedlitschka, Ernst: *See*—
Fabian, Peter; Eisenhuth, Karlheinz; Jedlitschka, Ernst; and Krebs, Helmut, 4,364,811, Cl. 204-220.000.
Jehan, Michel: *See*—
Douchy, Michel; Tranchant, Jean-Louis; and Jehan, Michel, 4,364,770, Cl. 75-53.000.
Jekkel nee Bokany, Antonia: *See*—
Gado, Istvan; Jekkel nee Bokany, Antonia; Szvoboda, Gyorgy; Jarai, Miklos; Piukovich, Sandor; and Istvan, Sandor, 4,365,020, Cl. 435-80.000.
Jenkins, Jon A.; and Schwan, Herbert A., to Imed Corporation. Apparatus for converting a pump to a controller. 4,364,386, Cl. 128-214.00E.
Jenkner, Erwin. Frame for a reciprocable circular saw. 4,364,291, Cl. 83-100.000.
Jeno's, Inc.: *See*—
Munter, Arnold M.; and Ahlgren, David W., 4,364,963, Cl. 426-283.000.
Jensen, Arthur S.: *See*—
Bluzer, Nathan; Jensen, Arthur S.; Schroder, Dieter K.; and Malmberg, Paul R., 4,364,164, Cl. 29-571.000.
Jerdon Industries, Inc.: *See*—
Weiss, Richard V., 4,365,141, Cl. 219-370.000.
Jerominek, Joseph L.: *See*—
Laliberte, Albert J.; and Jerominek, Joseph L., 4,364,878, Cl. 264-2.200.
Jezl, James L.: *See*—
Schneider, Abraham; Khelghatian, Habet M.; Hague, Louise D.; and Jezl, James L., 4,365,045, Cl. 525-247.000.
Jinnai, Koichiro: *See*—
Horike, Masanori; Jinnai, Koichiro; Iwasaki, Kyuhachiro; and Kodama, Yutaka, 4,365,255, Cl. 346-75.000.
Jirak, Thomas L.: *See*—
Citron, Paul; Hepp, Dennis G.; and Jirak, Thomas L., 4,364,397, Cl. 128-710.000.
Jobst Institute, Inc.: *See*—
Mummert, Thomas A., 4,364,128, Cl. 3-6.100.
Joel, Amos E., Jr., to Bell Telephone Laboratories, Incorporated. Cipher apparatus for multiplex pulse code modulation systems. 4,365,111, Cl. 178-22.130.
Johanson, Lars; Haft, Phil; Bonavita, Frank; Feldstein, George; Greenberg, Steve; and Brady, Kevin, to Eltee Pulsitron. Method and apparatus for vector machine control. 4,365,300, Cl. 364-474.000.
John Lysaght (Australia) Limited: *See*—
Barrett, Richard C., 4,364,327, Cl. 118-102.000.
John, Raymond; Apfelbaum, Jerome G.; and Moore, Robert L., to Engineering Inventions, Inc.; and Multisensors Inc., a part interest. Apparatus for preparing food. 4,364,308, Cl. 99-351.000.
Johns Hopkins University, The: *See*—
Lam, Wing-Chee, 4,365,341, Cl. 378-65.000.
Johnson, Carl B., to Pontiac Furniture, Inc. Reclining chair. 4,364,603, Cl. 297-84.000.
Johnson & Johnson Products, Inc.: *See*—
Gander, Robert J.; Buck, Carl J.; and Sipos, Tibor, 4,364,924, Cl. 424-49.000.
Sipos, Tibor; and Motkowski, Henry F., Jr., 4,364,927, Cl. 424-56.000.
Johnson, Joseph N. Tripod torch handle. 4,364,372, Cl. 126-39.00R.
Johnson, Marvin M.: *See*—
McDaniel, Max P.; and Johnson, Marvin M., 4,364,839, Cl. 252-430.000.
McDaniel, Max P.; and Johnson, Marvin M., 4,364,840, Cl. 252-430.000.
McDaniel, Max P.; and Johnson, Marvin M., 4,364,841, Cl. 252-430.000.
McDaniel, Max P.; and Johnson, Marvin M., 4,364,842, Cl. 252-430.000.
McDaniel, Max P.; and Johnson, Marvin M., 4,364,854, Cl. 252-437.000.
McDaniel, Max P.; and Johnson, Marvin M., 4,364,855, Cl. 252-437.000.
Johnson, Matthey & Co., Limited: *See*—
Broadhurst, Richard C., 4,364,173, Cl. 29-882.000.
Enga, Bernard E., 4,364,727, Cl. 432-1.000.
Johnson, Michael R.: *See*—
Bindra, Jasjit S.; Eggler, James F.; Johnson, Michael R.; and Schaaf, Thomas K., 4,365,077, Cl. 560-53.000.
Johnson, William M.; and Calhoon, Kelly L., to Celotex Corporation, The. Removable-tilt-out window construction. 4,364,199, Cl. 49-181.000.
Johnston, William J.: *See*—
Berg, Morris; Schaefer, Carl F.; and Johnston, William J., 4,364,761, Cl. 55-523.000.
Jones, Catherine C.: *See*—
Jones, John F.; and Jones, Catherine C., 4,364,145, Cl. 15-236.00R.
Jones, James S. Fluid flow control device. 4,364,409, Cl. 137-486.000.
Jones, John F.; and Jones, Catherine C. Scraping tool. 4,364,145, Cl. 15-236.00R.
Jones, Lynn L., to United States of America, Energy. Latin square three dimensional gage master. 4,364,182, Cl. 33-174.00H.
Jones, Robert L.; Otey, Milton G.; and Perkins, Roy W., to United States of America, Energy. Method for selectively removing fluorine and fluorine-containing contaminants from gaseous UF_6. 4,364,906, Cl. 423-19.000.
Junkin, James E.: *See*—
Schmid, Bruce K.; and Junkin, James E., 4,364,818, Cl. 208-10.000.
Jusionis, Vytautas J.: *See*—
Kazlauskas, Gasparas; Jusionis, Vytautas J.; Westerberg, Max M.; and Meacham, John W., 4,365,132, Cl. 219-60.00A.
Jyoko, Keizou: *See*—
Kawano, Kenzi; Fukaya, Koichi; and Jyoko, Keizou, 4,364,169, Cl. 29-596.000.
Kabushiki Kaisha GemVac: *See*—
Sakuma, Shinzo; and Warabi, Junichi, 4,365,127, Cl. 200-144.00B.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Sato, Yoshito; and Matsumoto, Minoru, 4,364,443, Cl. 180-9.500.
Yamamoto, Teiji; and Yamazaki, Tsukasa, 4,364,572, Cl. 277-92.000.
Kabushiki Kaisha Morita Seisakusho: *See*—
Nishikawa, Kazuo; and Hozumi, Kazuo, 4,365,340, Cl. 378-039.000.
Kabushiki Kaisha Nippon Coicno: *See*—
Hayashi, Yukichi; Tamura, Masauuki; Sugimoto, Osamu; Takizawa, Masayoshi; Nishioka, Tatsujiro; Akagawa, Masaki; and Yokohda, Yutaka, 4,364,404, Cl. 133-4.00A.
Kabushiki Kaisha Sato: *See*—
Sato, Yo, 4,364,312, Cl. 101-110.000.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Morita, Masayuki; Kubota, Kazuhisa; and Nakano, Tasuku, 4,365,121, Cl. 200-61.270.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Hattori, Mitsuhiro; Fujii, Tomoo; and Kono, Hiroya, 4,364,306, Cl. 92-71.000.
Kabushiki Kaishi Meidensha: *See*—
Sakuma, Shinzo; and Warabi, Junichi, 4,365,127, Cl. 200-144.00B.
Kadowaki, Koju; Sarumaru, Kohei; and Shibano, Takeshi, to Mitsubishi Petrochemical Company Limited. Production of acrylic acid. 4,365,087, Cl. 562-534.000.
Kaeding, Warren W., to Mobil Oil Corporation. Para-selective zeolite catalysts treated with sulfur compounds. 4,365,104, Cl. 585-467.000.
Kaesgen, Hans-Hartmut: *See*—
Plamper, Gerhard R.; Fortlage, Paul R.; and Kaesgen, Hans-Hartmut, 4,364,735, Cl. 474-14.000.
Kai, Tomokazu: *See*—
Otsuka, Shigeru; and Kai, Tomokazu, 4,365,347, Cl. 455-179.000.
Kai, Yoshiyuki: *See*—
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,365,048, Cl. 526-128.000.
Kaiser, Joseph G.: *See*—
Eagar, Thomas W.; Kaiser, Joseph G.; and Dunn, Gregory J., 4,365,134, Cl. 219-118.000.
Kaiser, Klaus-Peter: *See*—
Viertel, Lothar; and Kaiser, Klaus-Peter, 4,364,597, Cl. 296-97.00H.
Kalamazoo Conveyor Company: *See*—
Burns, Donald L.; Harbour, John M.; and Lister, James J., 4,364,831, Cl. 210-298.000.
Kalnin, Ilmar L.; Breckenridge, George J., Jr.; DiEdwardo, Andrew H.; and Rhodes, John M., to Celanese Corporation. Process for the production of stabilized acrylic fibers which are particularly suited for thermal conversion to carbon fibers. 4,364,916, Cl. 423-447.600.
Kamgar, Avid; and Sinha, Ashok K., to Bell Telephone Laboratories, Incorporated. Fabrication of semiconductor devices including double annealing steps for radiation hardening. 4,364,779, Cl. 148-1.500.
Kamihama, Kiyoshi: *See*—
Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, 4,364,608, Cl. 301-37.0SS.
Kamikawa, Yoshiyuki: *See*—
Nishihara, Masao; Fukui, Yoshinori; Kitamura, Yoshio; Kamikawa, Yoshiyuki; and Azuma, Haruki, 4,364,251, Cl. 72-58.000.
Kamoshita, Tetuo: *See*—
Itoh, Kiyoshi; Kamoshita, Tetuo; Sakai, Teruo; and Kawasaki, Harumi, 4,364,535, Cl. 248-123.100.
Kanai, Tamaki; Yamagichi, Takashi; Yoshikawa, Hirofumi; Suzuki, Kenji; and Ohta, Yoshikatsu, to Teijin Limited. Process for producing easily adherable polyester film. 4,364,885, Cl. 264-134.000.
Kanbayashi Seisakujo Company, Ltd.: *See*—
Nagata, Masayuki; and Miyazawa, Shozo, 4,365,115, Cl. 179-15.55T.
Kaneko, Kazuo: *See*—
Motohashi, Katsuichi; Obara, Toshio; Kaneko, Kazuo; and Yamaguchi, Masahiko, 4,364,999, Cl. 428-411.000.
Kao Soap Co., Ltd.: *See*—
Ito, Osamu; and Nishizawa, Kazunori, 4,364,992, Cl. 428-283.000.
Tokuyama, Mitsuru; Ohki, Kenji; Sagae, Masayuki; and Tsujii, Kaoru, 4,364,985, Cl. 428-149.000.
Karger, Eva R.: *See*—
Bartels-Keith, James R.; and Karger, Eva R., 4,365,085, Cl. 560-251.000.
Karino, Kimiji, to Hitachi, Ltd. Electronically controlled fuel supply apparatus for internal combustion engine. 4,364,355, Cl. 123-438.000.
Karino, Kimiji: *See*—
Kosuge, Tokuo; Atago, Takeshi; and Karino, Kimiji, 4,364,354, Cl. 123-437.000.

Kashiwazaki, Takashi: *See*—
Takizawa, Yoshiyuki; Kashiwazaki, Takashi; Shimoda, Koji; and Kuriyama, Kazumi, 4,365,278, Cl. 360-73.000.
Kassai Kabushikikaisha: *See*—
Kassai, Kenzou, 4,364,576, Cl. 280-87.02W.
Kassai, Kenzou, to Kassai Kabushikikaisha. Baby walker. 4,364,576, Cl. 280-87.02W.
Katae, Hiromi: *See*—
Yokogawa, Kanae; Yamamoto, Takeshi; Takase, Yoshiyuki; Katae, Hiromi; and Kawata, Shigeo, 4,364,926, Cl. 424-50.000.
Kataoka, Hiroyoshi: *See*—
Konishi, Sakuichi; Omori, Yukio; and Kataoka, Hiroyoshi, 4,365,043, Cl. 525-113.000.
Kataoka, Kenji: *See*—
Okamoto, Kouichi; Sakuyama, Masaki; and Kataoka, Kenji, 4,364,241, Cl. 62-505.000.
Katayama, Shitomi: *See*—
Ohno, Akira; Katayama, Shitomi; Senaha, Susumu; Kyo, Suizo; and Akagami, Akira, 4,364,637, Cl. 350-288.000.
Katayama, Tsutomu: *See*—
Teranishi, Susumu; Kawasaki, Yoichi; Katayama, Tsutomu; and Taniguchi, Hitoshi, 4,364,862, Cl. 260-112.00R.
Katayama, Yoshinori; and Tuchiya, Yoshimasa, to Nissan Motor Co., Ltd. Vehicle sun roof construction. 4,364,601, Cl. 296-221.000.
Katayama, Yutaka: *See*—
Tatsuwaki, Masao; Nemoto, Shin; Katayama, Yutaka; Okada, Michio; and Hotta, Kazuyuki, 4,365,307, Cl. 364-557.000.
Katchman, Arthur: *See*—
Cooper, Glenn D.; and Katchman, Arthur, 4,365,038, Cl. 260-29.1SB.
Cooper, Glenn D.; and Katchman, Arthur, 4,365,042, Cl. 525-68.000.
Kato, Akira: *See*—
Andoh, Haruo; Kitaoka, Susumu; Sueyoshi, Toshinobu; Ishida, Hikaru; and Kato, Akira, 4,364,988, Cl. 428-212.000.
Kato, Hisakatsu: *See*—
Yamada, Koichi; Harato, Takuo; Kato, Hisakatsu; and Shiozaki, Yasumi, 4,364,919, Cl. 423-629.000.
Kato, Masashi. Waterwheel system for aeration. 4,364,826, Cl. 210-150.000.
Katsuragawa Electric Co., Ltd.: *See*—
Noda, Nobutaka, 4,364,659, Cl. 355-14.00D.
Katz, Daniel S.; and Olson, Kenneth E., to American Cyanamid Company. HNCO Manufacture by adiabatic air oxidation of HCN. 4,364,913, Cl. 423-365.000.
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., to Tandem Computers Incorporated. Multiprocessor system. 4,365,295, Cl. 364-200.000.
Kaufman, Benjamin J., to Texaco Inc. Process for preparing a haze-free detergent and corrosion inhibiting additive for motor fuels. 4,364,846, Cl. 252-392.000.
Kawabata, Yasuhiro; and Aoki, Kongo, to Aisin Seiki Kabushiki Kaisha. Vacuum actuator. 4,364,301, Cl. 91-20.000.
Kawagoe, Hiroto, to Hitachi, Ltd. Semiconductor integrated circuit device composed of insulated gate field-effect transistor. 4,365,263, Cl. 357-45.000.
Kawamura, Masaharu; Sakurada, Nobuaki; Shinoda, Nobuhiko; Ito, Tadashi; Ito, Fumio; and Murakami, Hiroyashu, to Canon Kabushiki Kaisha. Control device for a camera. 4,364,647, Cl. 354-23.00D.
Kawano, Kenzi; Fukaya, Koichi; and Jyoko, Keizou, to Nippondenso Co., Ltd. Method of producing a stator iron core. 4,364,169, Cl. 29-596.000.
Kawasaki, Harumi: *See*—
Itoh, Kiyoshi; Kamoshita, Tetuo; Sakai, Teruo; and Kawasaki, Harumi, 4,364,535, Cl. 248-123.100.
Kawasaki, Yoichi: *See*—
Teranishi, Susumu; Kawasaki, Yoichi; Katayama, Tsutomu; and Taniguchi, Hitoshi, 4,364,862, Cl. 260-112.00R.
Kawata, Shigeo: *See*—
Yokogawa, Kanae; Yamamoto, Takeshi; Takase, Yoshiyuki; Katae, Hiromi; and Kawata, Shigeo, 4,364,926, Cl. 424-50.000.
Kazlauskas, Gasparas; Jusionis, Vytautas J.; Westerberg, Max M.; and Meacham, John W. Welding apparatus for polygonal cross-sectioned tubing. 4,365,132, Cl. 219-60.00A.
KB Denver, Inc.: *See*—
Pounds, Walter R., 4,365,120, Cl. 200-5.00A.
Kearney & Trecker Corporation: *See*—
Jamnik, Donald J., 4,365,315, Cl. 364-900.000.
Keffer, Garry C.: *See*—
Pasternack, Henry J.; and Keffer, Garry C., 4,365,190, Cl. 323-211.000.
Keiper Automobiltechnik GmbH & Co. KG: *See*—
Kluting, Bernd, 4,364,536, Cl. 248-429.000.
Keller, Arnold, to Waldemar Link GmbH & Co. Instrument for holding and inserting the tibia plate for an endo-knee prosthesis having sliding surfaces. 4,364,389, Cl. 128-303.00R.
Keller, George D., to Beta, B.V. Flow actuating switching device. 4,365,125, Cl. 200-81.90M.
Kelly, Steven M. Method of forming an electrical connector. 4,364,172, Cl. 29-858.000.
Kemp, James M.; and Phillips, Robert N., to Atwood Vacuum Machine Company. Apparatus for mounting a transmission selector. 4,364,450, Cl. 180-336.000.
Kenan, Richard P.: *See*—
Verber, Carl M.; and Kenan, Richard P., 4,364,633, Cl. 350-96.140.
Kennedy, Arthur E., to National Gypsum Company. Gypsum wallboard and method for producing same. 4,364,795, Cl. 162-158.000.
Kennerly, John M.; Lindner, Gordon M.; and Rowe, John C., to United States of America, Energy. Flowmeter for determining average rate of flow of liquid in a conduit. 4,364,269, Cl. 73-223.000.
Keranen, Robert M.: *See*—
Robe, John K.; and Keranen, Robert M., 4,365,288, Cl. 363-141.000.
Kerber, William X., Jr. Assembly for preparing and dispensing infantile dietary formulation. 4,365,143, Cl. 219-401.000.
Kerekes, Andras: *See*—
Szejtli, Jozsef; Budai, Zsuzsanna; Pap nee Imrenyi, Gabriella; and Kerekes, Andras, 4,365,061, Cl. 536-103.000.
Keritsis, Gus D., to Philip Morris Incorporated. Method for selective denitration of tobacco. 4,364,401, Cl. 131-297.000.
Kernforschungsanlage Julich GmbH: *See*—
Forster, Siegfried; Kleemann, Manfred; and Sack, Berthold, 4,364,726, Cl. 431-215.000.
Hemmerich, Johann, 4,364,235, Cl. 62-55.500.
Kertesz, Ferenc: *See*—
Sack, Wieland; Anthonsen, Reiner; and Kertesz, Ferenc, 4,364,971, Cl. 427-44.000.
Kesling, Haven S., Jr.: *See*—
Hsu, Chao-Yang; and Kesling, Haven S., Jr., 4,365,079, Cl. 560-191.000.
Kettering Medical Center: *See*—
Cobb, Carl W. E., 4,364,200, Cl. 49-192.000.
Kettle, Leslie J.; and Newton, Barry P., to English Electric Valve Company Limited. Switching device. 4,365,287, Cl. 363-94.000.
Keyes, Richard M., to Beatrice Foods Co. Machine for mixing and cooling batches of dry powder ingredients and water. 4,364,666, Cl. 366-142.000.
Khadzhai, Yaroslav I.: *See*—
Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; Shalimov, Alexandr A.; Furmanov, Jury A.; Silchenko, Valery P.; Shalimov, Sergei A.; Khadzhai, Yaroslav I.; Obolentseva, Galina V.; and Vorobiev, Nikolai E., 4,364,393, Cl. 128-335.500.
Khelghatian, Habet M.: *See*—
Schneider, Abraham; Khelghatian, Habet M.; Hague, Louise D.; and Jezl, James L., 4,365,045, Cl. 525-247.000.
Khromov, Vyacheslav I.: *See*—
Gorbatov, Vasily M.; Spirin, Evgeny T.; Shakhov, Vladimir V.; Vagin, Viktor V.; Khromov, Vyacheslav I.; Bogushev, Zimel A.; Eremin, Viktor I.; Vainzof, Kaletta M.; and Podkhvatilin, Evgeny R., 4,364,309, Cl. 99-352.000.
Kidde, Inc.: *See*—
Brunelle, Rene J., 4,364,604, Cl. 297-163.000.
Kidde, Inc. (Presto Lock Company Division): *See*—
Remington, Richard C., 4,364,150, Cl. 16-126.000.
Kiekert GmbH & Co. Kommanditgesellschaft: *See*—
Kleefeldt, Frank, 4,364,249, Cl. 70-264.000.
Kierstead, Richard W.: *See*—
Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,365,070, Cl. 549-263.000.
Kiessling, Klaus: *See*—
Dreesen, Peter; and Kiessling, Klaus, 4,364,704, Cl. 414-624.000.
Kilcup, Richard G., to United States of America, Air Force. Phase shifter adjustment apparatus. 4,365,173, Cl. 307-412.000.
Kim, Kee W., to Daniel Industries, Inc. Valve seat with sediment guard. 4,364,544, Cl. 251-328.000.
Kimbrel, Henry E.: *See*—
Kraft, George R.; Cole, Albert V.; and Kimbrel, Henry E., 4,364,465, Cl. 198-452.000.
Kimura, Hiroshi, to Yamaha Hatsudoki Kabushiki Kaisha. Vehicular engine. 4,364,340, Cl. 123-55.00R.
Kimura, Hiroyuki: *See*—
Mamiya, Toshiharu; Yamada, Tateo; Hirohata, Michio; Ogawa, Yukio; and Kimura, Hiroyuki, 4,364,649, Cl. 354-25.000.
Kimura, Kaoru; and Sakabe, Kazuyuki, to Toagosei Chemical Industry Co., Ltd. Novel 2-cyanoacrylate, process for producing same and curable composition comprising same. 4,364,876, Cl. 260-465.400.
Kimura, Shigenobu: *See*—
Ogita, Minoru; and Kimura, Shigenobu, 4,365,349, Cl. 455-192.000.
Kincheloe, David W., to King Instrument Corporation. Splicer assembly for a tape cassette loader. 4,364,791, Cl. 156-506.000.
King Instrument Corporation: *See*—
Kincheloe, David W., 4,364,791, Cl. 156-506.000.
Kinjo, Hisao, to Victor Company of Japan, Ltd. Magnetic recording and reproducing apparatus with device for tracking control of rotary magnetic heads. 4,365,279, Cl. 360-109.000.
Kinoshita, Kunio: *See*—
Kokaji, Norio; and Kinoshita, Kunio, 4,365,276, Cl. 358-301.000.
Kinsley, John P., to Seaquist Valve Company, division of Pittway Corporation. Child resistant closure. 4,364,484, Cl. 215-220.000.
Kirby, Raymond L., Jr.: *See*—
Ivary, David J.; and Kirby, Raymond L., Jr., 4,364,503, Cl. 226-45.000.
Kis-tamas, Attila: *See*—
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Jakab, Jozsef; Kis-tamas, Attila; and Ujvari, Istvan, 4,364,931, Cl. 424-84.000.
Kisanuki, Toru: *See*—
Yuasa, Yoshio; Kisanuki, Toru; and Shirai, Susumu, 4,364,662, Cl. 356-225.000.

Kiss nee Ajzert, Ilona: *See—*
Takacs, Kalman; Kiss nee Ajzert, Ilona; Simay, Antal; Literati Nagy, Peter; Hetyey nee Papp, Maria; Ecsery nee Puskas, Marian; Szekeres, Laszlo; Papp, Gyula; Viragh, Sandor; and Udvardy, Eva, 4,365,064, Cl. 546-148.000.

Kitahara, Nobuko: *See—*
Kitajima, Nobuo; Ishihara, Shunichi; Nishigaki, Yuji; and Kitahara, Nobuko, 4,365,015, Cl. 430-62.000.

Kitai, Kiyoshi; and Takazawa, Yuzuru, to Seiko Koki Kabushiki Kaisha. Safety device of auto-focusing point adjusting camera. 4,364,648, Cl. 354-25.000.

Kitajima, Nobuo; Ishihara, Shunichi; Nishigaki, Yuji; and Kitahara, Nobuko, to Canon Kabushiki Kaisha. Photosensitive member for electrophotography composed of a photoconductive amorphous silicon. 4,365,015, Cl. 430-62.000.

Kitamura, Yoshio: *See—*
Nishihara, Masao; Fukui, Yoshinori; Kitamura, Yoshio; Kamikawa, Yoshiyuki; and Azuma, Haruki, 4,364,251, Cl. 72-58.000.

Kitaoka, Susumu: *See—*
Andoh, Haruo; Kitaoka, Susumu; Sueyoshi, Toshinobu; Ishida, Hikaru; and Kato, Akira, 4,364,988, Cl. 428-212.000.

Kiyoki, Mamoru; Endo, Hiroyoshi; Naruchi, Tatsuyuki; and Hashimoto, Yoshinobu, to Teijin Limited; and Teijin Pharmaceutical Co., Ltd. Method for regulating bone metabolism of warm-blooded animals, and pharmaceutical compositions thereof. 4,364,941, Cl. 424-236.000.

Klausecker, Karl; and Muller, Manfred, to Siemens Aktiengesellschaft. Audio-frequency powerline carrier control system with a current supervisory device. 4,365,286, Cl. 363-58.000.

Kleefeldt, Frank, to Kiekert GmbH & Co. Kommanditgesellschaft. Central door-lock system for motor vehicles. 4,364,249, Cl. 70-264.000.

Kleemann, Manfred: *See—*
Forster, Siegfried; Kleemann, Manfred; and Sack, Berthold, 4,364,726, Cl. 431-215.000.

Klessing, Klaus; and Chatterjee, Shyam S., to Willmar Schwabe, Firma. 2-0- and 5-0-Substituted 1.4;3.6-dianhydrohexitol mononitrates and pharmaceutical composition. 4,364,953, Cl. 424-266.000.

Kleve, Mary, to Ned Strongin Associates, Inc. Doll with closing eyes. 4,364,195, Cl. 46-135.00R.

Klieger, Erich: *See—*
Speck, Ulrich; Blaszkiewicz, Peter; Seidelmann, Dieter; and Klieger, Erich, 4,364,921, Cl. 424-5.000.

Klockenbusch, Heinrich: *See—*
Ahrens, Norbert; and Klockenbusch, Heinrich, 4,364,665, Cl. 366-106.000.

Kloss, Henry E. Projection televison tube and process for forming same. 4,365,183, Cl. 313-478.000.

Kluting, Bernd, to Keiper Automobiltechnik GmbH & Co. KG. Device for adjusting a vehicle seat. 4,364,536, Cl. 248-429.000.

Knapp, Julius Z., to Schering Corporation. Injectable fluid container and method. 4,364,485, Cl. 215-232.000.

Knight, Webster B. Security audio visual emergency system. 4,365,237, Cl. 340-521.000.

Knight, William; and Marriott, David G., to Coventry Climax Limited. Industrial truck. 4,364,449, Cl. 180-271.000.

Knitter, Kathy A.; and Villa, Jose' L., to Diamond Shamrock Corporation. Carbonaceous materials in oil slurries. 4,364,742, Cl. 44-51.000.

Knoski, Jerry L. Attachable airfoil with movable control surface. 4,364,531, Cl. 244-3.270.

Knudson, Gary A. Panel forming apparatus. 4,364,253, Cl. 72-187.000.

Kobayashi, Akio: *See—*
Kondo, Toshio; Kobayashi, Akio; Eino, Tomomi; and Tajima, Masahiko, 4,365,299, Cl. 364-431.060.

Kobayashi, Nobuyuki; and Itoh, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of controlling the idling speed of an engine. 4,364,350, Cl. 123-339.000.

Kobayashi, Nobuyuki: *See—*
Itoh, Hiroshi; and Kobayashi, Nobuyuki, 4,364,348, Cl. 123-339.000.

Kobe Steel, Limited: *See—*
Nishihara, Masao; Fukui, Yoshinori; Kitamura, Yoshio; Kamikawa, Yoshiyuki; and Azuma, Haruki, 4,364,251, Cl. 72-58.000.

Kobylinski, Lee S., to TRW Inc. Well servicing apparatus. 4,364,545, Cl. 254-284.000.

Kochi, Hiromu: *See—*
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,364,943, Cl. 424-246.000.

Kochs Adler AG: *See—*
Schneider, Gerhard; Ludwig, Rolf; and Fischer, Jochen, 4,364,317, Cl. 112-132.000.
Schneider, Gerhard; Ludwig, Rolf; and Fischer, Jochen, 4,364,318, Cl. 112-147.000.

Kodama, Yutaka: *See—*
Horike, Masanori; Jinnai, Koichiro; Iwasaki, Kyuhachiro; and Kodama, Yutaka, 4,365,255, Cl. 346-75.000.

Kohno, Tadashi; Shimizu, Takahiko; Takahashi, Kenji; Fukui, Hishao; Okubo, Akio; and Masuda, Noriaki, to Pentel Kabushiki Kaisha. Writing instrument. 4,364,684, Cl. 401-264.000.

Koike, Norio; Baji, Toru; Tsukada, Toshihisa; and Yamamoto, Hideaki, to Hitachi, Ltd. Method for fabricating a solid-state imaging device using photoconductive film. 4,364,973, Cl. 427-75.000.

Koivu, Albert H.: *See—*
Reizer, Robert F.; Koivu, Albert H.; and Cohen, Leslie J., 4,365,029, Cl. 523-437.000.

Koizumi, Chie, to Osaka Rasenkan Kogyo Kabushiki Kaisha. Method for the manufacture of diaphragm bellows. 4,364,252, Cl. 72-59.000.

Kokaji, Norio; and Kinoshita, Kunio, to Iwatsu Electric Co., Ltd. Copy magnification change apparatus in magnetic copying machine. 4,365,276, Cl. 358-301.000.

Koller, Ernst. Structural unit in the form of a profiled bar. 4,364,216, Cl. 52-731.000.

Kollin, Adam. Visual signalling apparatus. 4,365,238, Cl. 340-521.000.

Komossa, Werner; and Elsner, Uwe, to Hauni-Werke Korber & Co. KG. Apparatus for automatic compensation of wear upon orbiting knives in tobacco cutting machines or the like. 4,364,402, Cl. 131-311.000.

Komossa, Werner; and von Wichert, Nils, to Hauni- Werke Korber & Co. KG. Apparatus for feeding cardboard blanks or the like to a magazine. 4,364,549, Cl. 271-1.000.

Koncz, Attila P., to Canadian Fine Color Company, Limited. Process and apparatus for purifying waste gases. 4,364,750, Cl. 55-89.000.

Kondo, Hideyo: *See—*
Murai, Keiichi; Tanaka, Naoto; and Kondo, Hideyo, 4,364,329, Cl. 118-652.000.

Kondo, Kunio: *See—*
Yosizato, Akihiko; Morifuji, Yoshinori; Kondo, Kunio; and Yoshino, Masatsugu, 4,365,032, Cl. 524-99.000.

Kondo, Toshio; Kobayashi, Akio; Eino, Tomomi; and Tajima, Masahiko, to Nippondenso Company, Limited. Method and apparatus for controlling air/fuel ration in internal combustion engines. 4,365,299, Cl. 364-431.060.

Kong, Cheung T. Easy-dispensing safety cap. 4,364,492, Cl. 222-205.000.

Konishi, Sakuichi; Omori, Yukio; and Kataoka, Hiroyoshi, to Nippon Paint Co., Ltd. Resinous particles for coating composition and its production. 4,365,043, Cl. 525-113.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Hiraike, Fumiaki, 4,364,651, Cl. 354-31.000.

Kono, Hiroya: *See—*
Hattori, Mitsuhiro; Fujii, Tomoo; and Kono, Hiroya, 4,364,306, Cl. 92-71.000.

Kontz, Robert F., to Owens-Illinois, Inc. Method for making a multilayered blown plastic container. 4,364,896, Cl. 264-513.000.

Koolatron Industries, Ltd.: *See—*
Reed, Michael A., 4,364,234, Cl. 62-3.000.

Kopnitsky, Joseph R., deceased: *See—*
Nathenson, Richard D.; Pipich, Charles W.; and Kopnitsky, Joseph R., deceased, 4,365,176, Cl. 310-54.000.

Kopnitsky, Mary C., executrix: *See—*
Nathenson, Richard D.; Pipich, Charles W.; and Kopnitsky, Joseph R., deceased, 4,365,176, Cl. 310-54.000.

Koppes, Cecilia R. Wheelchair table and food tray for handicapped persons. 4,364,699, Cl. 414-9.000.

Korte, Rolf D.; and Rohlje, Wilfried. Plug-type bottle closure (plastic cork). 4,364,486, Cl. 215-296.000.

Kosuge, Tokuo; Atago, Takeshi; and Karino, Kimiji, to Hitachi, Ltd. Air-fuel ratio controller for carburetor. 4,364,354, Cl. 123-437.000.

Koulbanis, Constantin: *See—*
Griat, Jacqueline; Zabotto, Arlette; and Koulbanis, Constantin, 4,364,930, Cl. 424-81.000.

Kraft, George R.; Cole, Albert V.; and Kimbrel, Henry E., to Nabisco, Inc. Collating conveyor system. 4,364,465, Cl. 198-452.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Cirkel, Hans-Jurgen; and Bette, Willi, 4,365,337, Cl. 372-87.000.

Kramer, Charles F., to Steel Heddle Manufacturing Company. Foldable nose guide device for a heddle frame. 4,364,420, Cl. 139-91.000.

Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Combating fungi with 1-(substituted phenyl)-1-oximino-2-(1,2,4-triazol-1-yl)-ethane. 4,364,955, Cl. 424-269.000.

Kramis, Jost: *See—*
Bitzer, Diethelm; Kramis, Jost; and Ackermann, Jakob, 4,364,746, Cl. 51-298.000.

Kranzlmuller, Reinhard. Carrier apparatus for vertical and horizontal transportation of loads. 4,364,706, Cl. 414-733.000.

Krebs, Helmut: *See—*
Fabian, Peter; Eisenhuth, Karlheinz; Jedlitschka, Ernst; and Krebs, Helmut, 4,364,811, Cl. 204-220.000.

Kreisel, Moshe: *See—*
Manor, Shalom; Bar-Guri, Moshe; Alexandron, Amiad; and Kreisel, Moshe, 4,364,914, Cl. 423-399.000.

Kreitzberg, Jeffrey P., to Nelson Irrigation Corporation. Nozzle assembly for low pressure impact sprinkler. 4,364,519, Cl. 239-230.000.

Krishnan, Ramamoorthy M.: *See—*
Becht, Cletus A.; Krishnan, Ramamoorthy M.; and Hogan, James M., 4,364,887, Cl. 264-171.000.

Kristinsson, Haukur: *See—*
Pissiotas, Georg; Rohr, Otto; and Kristinsson, Haukur, 4,364,769, Cl. 71-90.000.

Kruger, Hans; and Walter, Karl-Heinz, to Siemens Aktiengesellschaft. Arrangement for brightness gains of passive display units. 4,364,640, Cl. 350-345.000.

Krupp Polysius AG: *See—*
Ahrens, Norbert; and Klockenbusch, Heinrich, 4,364,665, Cl. 366-106.000.

Kubota, Kazuhisa: *See—*
Morita, Masayuki; Kubota, Kazuhisa; and Nakano, Tasuku, 4,365,121, Cl. 200-61.270.

Kucharewski, Nicholas, to RCA Corporation. Pulse counter type circuit for power-up indication. 4,365,174, Cl. 307-594.000.

Kucharewski, Nicholas: *See*—
Gentile, Carmine; and Kucharewski, Nicholas, 4,365,212, Cl. 331-111.000.
Kudva, Balakrishna V.: *See*—
Strother, Charles M.; and Kudva, Balakrishna V., 4,364,392, Cl. 128-325.000.
Kulcsar, Gabor: *See*—
Seres, Jeno; Varkonyi nee Schlavicsko, Erika; Virag, Sandor; and Kulcsar, Gabor, 4,364,958, Cl. 424-274.000.
Kume, Shyoichi: *See*—
Tabata, Hideyo; Kuwahara, Yoshitaka; Machida, Michihide; Kume, Shyoichi; Iga, Takeo; Saitoh, Kazuo; and Tomura, Shinji, 4,365,022, Cl. 501-97.000.
Kume, Tsutomu: *See*—
Ishii, Yoshiaki; Ando, Naoyoshi; Kume, Tsutomu; and Fujinami, Shosaku, 4,364,796, Cl. 201-4.000.
Kunde, Klaus, to Sulzer Morat GmbH. Circular knitting machine for the production of high pile fabrics having combed-in fibers. 4,364,243, Cl. 66-9.00B.
Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Monoclonal antibody to human cytotoxic and suppressor T cells and methods of preparing same. 4,364,932, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Monoclonal antibody to a human thymocyte antigen and methods of preparing same. 4,364,933, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Monoclonal antibody to a human early thymocyte antigen and methods for preparing same. 4,364,934, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Monoclonal antibody to a human prothymocyte antigen and methods of preparing same. 4,364,935, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Monoclonal antibody to a human monocyte antigen and methods of preparing same. 4,364,936, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Monoclonal antibody to a human T cell antigen and methods of preparing same. 4,364,937, Cl. 424-85.000.
Kunimatsu, Yoshio; Okumura, Hajime; Masai, Hiroshi; Yamada, Koki; and Yamada, Mikio, to Nakano Vinegar Co., Ltd. Process for the production of vinegar with high acetic acid concentration. 4,364,960, Cl. 426-17.000.
Kuper, Douglas D.: *See*—
Menezes, William A.; and Kuper, Douglas D., 4,365,313, Cl. 364-900.000.
Kurishita, Akiyoshi: *See*—
Mizuno, Hiroshige; and Kurishita, Akiyoshi, 4,364,881, Cl. 264-40.700.
Kuriyama, Kazumi: *See*—
Takizawa, Yoshiyuki; Kashiwazaki, Takashi; Shimoda, Koji; and Kuriyama, Kazumi, 4,365,278, Cl. 360-73.000.
Kurose, Seiji: *See*—
Soya, Masahiro; Sato, Isao; and Kurose, Seiji, 4,364,543, Cl. 251-221.000.
Kurt Manufacturing Company, Inc.: *See*—
Lenz, John O., 4,364,695, Cl. 409-103.000.
Kusakabe, Hideo: *See*—
Saito, Shinichi; Aikawa, Kazuo; Orino, Michio; Aoi, Kazuya; and Kusakabe, Hideo, 4,365,057, Cl. 528-503.000.
Kutsay, Ali U. Double shear beam strain gage load cell. 4,364,280, Cl. 73-862.660.
Kuus, Olaf; and Relovsky, Jakob, to Daimler-Benz A.G. Fastening device for roof carrier of a motor vehicle. 4,364,498, Cl. 224-42.45R.
Kuwahara, Hiroshi: *See*—
Noguchi, Atomi; Ide, Jushi; Kuwahara, Hiroshi; and Miyazaki, Yoshihiro, 4,365,309, Cl. 364-702.000.
Kuwahara, Yoshitaka: *See*—
Tabata, Hideyo; Kuwahara, Yoshitaka; Machida, Michihide; Kume, Shyoichi; Iga, Takeo; Saitoh, Kazuo; and Tomura, Shinji, 4,365,022, Cl. 501-97.000.
Kuwayama, Takeshi: *See*—
Seto, Susumu; Tokuhara, Mitsuhiro; Takemura, Yukio; Yamada, Yu; and Kuwayama, Takeshi, 4,364,658, Cl. 355-8.000.
Kvita, Vratislav: *See*—
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,365,068, Cl. 548-435.000.
Kyo, Suizo: *See*—
Ohno, Akira; Katayama, Shitomi; Senaha, Susumu; Kyo, Suizo; and Akagami, Akira, 4,364,637, Cl. 350-288.000.
Kyriakides, Stelios; and Babcock, Charles D., to California Institute of Technology. Buckle arrestor for pipe using closely spaced turns of rod to form a coil. 4,364,692, Cl. 405-168.000.
Kyushima, Tatsuo: *See*—
Morisawa, Kunio; and Kyushima, Tatsuo, 4,364,285, Cl. 74-606.00R.
L. & D. Sales Corporation: *See*—
Flickinger, Jon M., 4,364,442, Cl. 177-177.000.
La Telemecanique Electrique: *See*—
Bouteille, Daniel; Marguet, Hugues; and Petrimaux, Eric, 4,364,414, Cl. 137-624.140.
Fechant, Louis J. M.; Siffroi, Lucien; and Anguille, Jean M., 4,365,223, Cl. 335-281.000.
Laberge, Joseph G. J.: *See*—
Tiedemann, Herman H.; Thibault, Gilbert; and Laberge, Joseph G. J., 4,364,917, Cl. 423-474.000.
Labeyrie, Etienne; Poirier, Jean-Pierre; and Arnaud, Francoise, to Science Union et Cie. Method of treating insufficiencies in hematosis with almitrine. 4,364,946, Cl. 424-249.000.
Lagoni, William A., to RCA Corporation. Horizontal and vertical image detail processing of a color television signal. 4,365,266, Cl. 358-37.000.
Laliberte, Albert J.; and Jerominek, Joseph L., to Omnitech Inc. Method for molding ophthalmic lenses. 4,364,878, Cl. 264-2.200.
Laloz, Jean P.; Mimoun, Hubert; Rouxel, Jean J.; and Saussine, Lucien, to Institut Francais du Petrole. Process for converting olefins to unsaturated esters, using catalysts containing palladium hydroxamates. 4,365,082, Cl. 560-243.000.
Lam, Wing-Chee, to Johns Hopkins University, The. On-line treatment monitoring for radiation teletherapy. 4,365,341, Cl. 378-65.000.
LaMar, Stephen R., to Sweco, Incorporated. Method and apparatus for measuring phase angles of oscillatory motion of vibratory machinery. 4,364,275, Cl. 73-649.000.
Lamboo, Theodorus F., to U.S. Philips Corporation. Gas discharge laser device. 4,365,335, Cl. 372-34.000.
Lambrecht, Richard M.: *See*—
Meyer, Geerd-J.; and Lambrecht, Richard M., 4,364,898, Cl. 376-190.000.
Lampe, Ivan B.: *See*—
Rahm, Joseph A.; and Lampe, Ivan B., 4,364,908, Cl. 423-86.000.
Lampert, Norman R., to Bell Telephone Laboratories, Incorporated. Stripline support assembly. 4,365,222, Cl. 333-238.000.
Landa, Benzion, to Savin Corporation. Electromagnetic helical spring clutch. 4,364,460, Cl. 192-35.000.
Landa, Benzion, to Savin Corporation. Multiple-blade pickoff for electrophotographic copier. 4,364,657, Cl. 355-3.0SH.
Landa, Benzion, to Savin Corporation. Process and apparatus for transferring developed electrostatic images to a carrier sheet, improved carrier sheet for use in the process and method of making the same. 4,364,661, Cl. 355-3.0SH.
Landry, Norman R., to RCA Corporation. High power coaxial power divider. 4,365,215, Cl. 333-127.000.
Lang, John; and Hunter, R. Scott, to Reiner, Eric. Refuse receptacle with bag liners supplied through the bottom from replaceable liner supply packages. 4,364,490, Cl. 220-407.000.
Lang, Walter H.; and Muchel, Franz, to Carl Zeiss-Stiftung. Operation microscope having a small working distance. 4,364,629, Cl. 350-516.000.
Langley, Robert C. Apparatus for the production of aqueous alkali metal hypochlorite. 4,364,814, Cl. 204-278.000.
Lankenau, Henry G., to Ecodyne Corporation. Liquid concentration apparatus. 4,364,794, Cl. 159-17.00P.
Lanneau, Jacques: *See*—
Delcoigne, Adrien; and Lanneau, Jacques, 4,364,790, Cl. 156-346.000.
Larkin, Mark E., to Abbott Laboratories. Connecting device for medical liquid containers. 4,364,387, Cl. 128-214.00C.
Lask, Gert-Wilhelm, to International Minerals & Chemical Luxembourg Societe Anonyme. Method of producing an intermediate in the production of silicon or silicon carbide. 4,364,974, Cl. 427-213.000.
Lathery, Willie M.: *See*—
Nakhle, George D.; Bell, Cecil R.; Edwards, Arthur R.; Lathery, Willie M.; and Patel Navin D., 4,364,320, Cl. 112-262.200.
Lawrence Fell Limited: *See*—
Scott, William A., 4,364,205, Cl. 52-4.000.
Lawrence, John P.: *See*—
Chung, Daniel A.; and Lawrence, John P., 4,365,051, Cl. 528-64.000.
Lazzery, Angelo G.; Crouthamel, Marvin S.; and Coyle, Peter J., to United States of America, Energy. Method of fabricating a solar cell array. 4,364,508, Cl. 228-106.000.
Leamy, Harry J.; and Seidel, Thomas E., to Bell Telephone Laboratories, Incorporated. Formation of multilayer dopant distributions in a semiconductor. 4,364,778, Cl. 148-1.500.
Leatherman, Elbert W.: *See*—
Love, Robert R., Jr.; and Leatherman, Elbert W., 4,364,267, Cl. 73-146.000.
Lechner, Uwe: *See*—
Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, 4,364,944, Cl. 424-246.000.
Lee, Chung J., to Plastics Engineering Company. Fast crystallizing polyalkyleneterephthalate resin compositions. 4,365,036, Cl. 524-299.000.
Lee, John M.; and Bauman, William C., to Dow Chemical Company, The. Removal of Ca^{++} from $MgCl_2$. 4,364,909, Cl. 423-157.000.
Lee, Lin-Nan; and Lu, Shyue-Ching, to Communications Satellite Corporation. Multiple-destinational cryptosystem for broadcast networks. 4,365,110, Cl. 178-22.100.
Lee, Ronald L., to Westinghouse Electric Corp. Phase-locked loop with initialization loop. 4,365,211, Cl. 331-11.000.
Leep, Gus W.; and Root, Morris J., to Seymour of Sycamore, Inc. Coating composition. 4,365,028, Cl. 523-402.000.
Leffert, Charles B.: *See*—
O'Neal, Russell D.; Leffert, Charles B.; Teichmann, Theodor; and Teitel, Robert J., 4,364,897, Cl. 376-148.000.
Lefrancois, Jean, to Compagnie Generale des Etablissments Michelin. Tire valves for tubeless and tube tires. 4,364,427, Cl. 152-349.000.
Lefter, Jan D., to NPS Technologies, Inc. Pipe rupture restraint and jet shield diffuser assembly. 4,364,417, Cl. 138-42.000.
Leibowitz, Paul; and Weinstein, Marvin J., to Schering Corporation. Extraction of interferon from bacteria. 4,364,863, Cl. 260-112.00R.

Leins, Eberahrd; Walter, Manfred; and Gaiser, Willi, to Sulzer Morat GmbH. Knitting machine. 4,364,245, Cl. 66-78.000.
Leins, Eberhard; Walter, Manfred; and Gaiser, Willi, to Sulzer Morat GmbH. Knitting machine. 4,364,246, Cl. 66-145.00R.
Lembersky, Mark R.: *See*—
Chi, Uli H.; and Lembersky, Mark R., 4,364,732, Cl. 434-219.000.
Lenk, Erich: *See*—
Schippers, Heinz; Branscheid, Werner; Lenk, Erich; and Hardt, Udo, 4,364,717, Cl. 417-407.000.
Lenz, Henry G., to General Electric Co. Laminated rotor for a dynamoelectric machine with coolant passageways therein. 4,365,178, Cl. 310-61.000.
Lenz, John O., to Kurt Manufacturing Company, Inc. Carving machine with auxiliary frame. 4,364,695, Cl. 409-103.000.
Leonard, Eric M.: *See*—
Geyer, Frederick F.; and Leonard, Eric M., 4,365,258, Cl. 346-137.000.
Leonatti, John A., to Hoover Company, The. Vacuum cleaner filter bag collar arrangement. 4,364,757, Cl. 55-357.000.
Lepeytre, Jean P.: *See*—
Arondel, Patrick; and Lepeytre, Jean P., 4,364,631, Cl. 350-503.000.
Le Roy, Pierre: *See*—
Farge, Daniel; Moutonnier, Claude; Le Roy, Pierre; and Peyronel, Jean-Francois, 4,365,062, Cl. 544-22.000.
Lesher, George Y.; and Philion, Richard E., to Sterling Drug Inc. 1-(Pyridinyl)-2-(dimethylamino)ethenyl lower-alkyl ketones. 4,365,065, Cl. 546-334.000.
Letraset Corporation: *See*—
Dowzall, Martin E., 4,364,184, Cl. 33-447.000.
Levacher, Jean-Pierre: *See*—
Chapelle, Jules A.; Levacher, Jean-Pierre; Sanzey, Emile; and Vironneau, Pierre, 4,364,239, Cl. 62-235.100.
Levake, Richard N.; and Ferguson, Archibald E. Grade Liner. 4,364,175, Cl. 33-1.00H.
Lever Brothers Company: *See*—
Hargreaves, Neil G., 4,364,868, Cl. 260-410.700.
Pader, Morton, 4,364,837, Cl. 252-173.000.
Levesque, Richard A.: *See*—
Golovchenko, Jene A.; and Levesque, Richard A., 4,365,156, Cl. 378-84.000.
Levin, Philip S., to Corning Glass Works. Method and apparatus for extruding a honeycomb structure. 4,364,888, Cl. 264-177.00R.
Levine, Walter E., to Acheson Industries, Inc. Spray apparatus for metal forming and glassware forming machines. 4,364,719, Cl. 425-78.000.
Lewis, David. Shock absorber for tennis players. 4,364,564, Cl. 273-29.00R.
Lewis, Michael. Device for use in interdental arch wiring. 4,364,380, Cl. 128-89.00A.
Lewis, Philip L.: *See*—
Etheridge, Robert E.; and Lewis, Philip L., 4,364,517, Cl. 239-171.000.
Licata, Joseph P.; and Ricker, Dennis J., to General Motors Corporation. Strip wound dynamoelectric machine core. 4,365,180, Cl. 310-216.000.
Licentia Patent-Verwaltungs-GmbH: *See*—
Gillessen, Klaus; Rinderle, Heinz; Schairer, Werner; Siegle, Martin; and Malinowski, Christoph, 4,365,244, Cl. 340-782.000.
Morz, Gunter, 4,365,253, Cl. 343-786.000.
Licht, Richard R.: *See*—
Fleming, Peter B.; Licht, Richard R.; and Peisert, Joseph C., 4,364,210, Cl. 52-221.000.
Lidbrandt, Owe S.: *See*—
Treiber, Erich E.; Ehrengard, Dag E.; and Lidbrandt, Owe S., 4,364,890, Cl. 264-191.000.
Liebelt, Alvin: *See*—
Froese, Abram; Onotera, Larry Y.; and Liebelt, Alvin, 4,365,346, Cl. 455-42.000.
Lievestro, Louis: *See*—
Eiswerth, James E.; Lievestro, Louis; Haubert, Richard C.; and Maclin, Harvey M., 4,364,160, Cl. 29-156.80H.
Lilly Industries Limited: *See*—
Clark, Barry P.; Ross, William J.; and Todd, Alec, 4,364,956, Cl. 424-269.000.
Linde AG: *See*—
Wagner, Norbert, 4,364,753, Cl. 55-179.000.
Lindman, Borje L.; and Branden, Leif, to Telefonaktiebolaget L M Ericsson. Connection arrangement in a telephone instrument for connecting an additional speech device. 4,365,118, Cl. 179-159.000.
Lindner, Gordon M.: *See*—
Kennerly, John M.; Lindner, Gordon M.; and Rowe, John C., 4,364,269, Cl. 73-223.000.
Lindsay, Harold W. Tool holder. 4,364,693, Cl. 407-104.000.
Liou, Ming T.: *See*—
Jean, Ming T.; and Liou, Ming T., 4,364,611, Cl. 303-84.00R.
Lister, James J.: *See*—
Burns, Donald L.; Harbour, John M.; and Lister, James J., 4,364,831, Cl. 210-298.000.
Literati Nagy, Peter: *See*—
Takacs, Kalman; Kiss nee Ajzert, Ilona; Simay, Antal; Literati Nagy, Peter; Hetyey nee Papp, Maria; Ecsery nee Puskas, Marian; Szekeres, Laszlo; Papp, Gyula; Viragh, Sandor; and Udvardy, Eva, 4,365,064, Cl. 546-148.000.
Liu, Chia-Seng, to Hercules Incorporated. Polypropylene composition for extrusion coating. 4,365,044, Cl. 525-240.000.
Liu, Kou-Chang: *See*—
Howe, Robert K.; and Liu, Kou-Chang, 4,364,768, Cl. 71-88.000.
Livingston, Allan. Animal feeder. 4,364,335, Cl. 119-61.000.
Lloyd, Roland W. Minimal parts, quick picture frame. 4,364,192, Cl. 40-155.000.
Lockheed Corporation: *See*—
Wirt, Leslie S., 4,364,691, Cl. 405-26.000.
Loegering, Cory L., to Conoco Inc. Apparatus for removing substances from a mixture. 4,364,833, Cl. 210-521.000.
Loev, Bernard: *See*—
Neiss, Edward S.; and Loev, Bernard, 4,364,940, Cl. 424-230.000.
Loew, Peter: *See*—
Zink, Rudolf; and Loew, Peter, 4,364,738, Cl. 8-634.000.
Loge, Olaf: *See*—
Skuballa, Werner; Vorbrueggen, Helmut; Loge, Olaf; Vischer, Peter; and Raduchel, Bernd, 4,364,951, Cl. 424-263.000.
Lohmann, Dieter; and Wyler, Siegfried, to Ciba-Geigy Corporation. Photochemical preparation of silanes containing imide groups. 4,364,808, Cl. 204-158.00R.
Lohner, Ludwig, to Bayerische Motoren Werke A.G. Trimmer for motorboats. 4,364,733, Cl. 440-2.000.
Lok Products Company: *See*—
Sharp, Joseph F.; Sutter, Ormond S.; and Cornwell, Philip W., 4,364,686, Cl. 403-347.000.
Lomas, David A.: *See*—
Vickers, Anthony G.; and Lomas, David A., 4,364,849, Cl. 252-417.000.
Lombardo, Phillip J.; and Smilgys, Bruno S., to Veeder Root Industries, Inc. Rotary drive anti-overtravel device. 4,365,147, Cl. 235-131.00R.
Longrod, Scott J.; and Oakley, Francis R., to SCM Corporation. Cartridge ribbon lift apparatus. 4,364,679, Cl. 400-212.000.
Longrod, Scott J.; and DuRoss, Robert M., to SCM Corporation. Acoustic member mounting means for use in typewriters. 4,364,682, Cl. 400-477.000.
Lopata, Ira: *See*—
Barto, Robert M., Jr.; Lopata, Ira; and Emden, Bernard V., 4,364,529, Cl. 242-195.000.
Lossef, Steven V. Insulin delivery device. 4,364,385, Cl. 128-213.00R.
Louis, Paul R.; Sorensen, Eugene R.; and Ballard, Thomas R., to Procter & Gamble Company, The. Apparatus for texturing a thermoplastic film. 4,364,723, Cl. 425-384.000.
Love, Robert R., Jr.; and Leatherman, Elbert W., to Goodyear Tire & Rubber Company, The. Method and apparatus for correlating tire inflation pressure and load. 4,364,267, Cl. 73-146.000.
Lower, Ralph C.; and Shirley, Roger D., to Robinair Manufacturing Corporation. Refrigerant recovery and recharging system. 4,364,236, Cl. 62-77.000.
Loyd, Ronald C.: *See*—
Tuggle, Lloyd H.; Loyd, Ronald C.; and Walker, Lee R., 4,364,435, Cl. 172-15.000.
Lu, Shyue-Ching: *See*—
Lee, Lin-Nan; and Lu, Shyue-Ching, 4,365,110, Cl. 178-22.100.
Lucas Industries Limited: *See*—
Brown, David J.; and Reid, Michael, 4,364,422, Cl. 141-1.100.
Halmshaw, Raymond P., 4,365,233, Cl. 340-73.000.
Ludwig, Rolf: *See*—
Schneider, Gerhard; Ludwig, Rolf; and Fischer, Jochen, 4,364,317, Cl. 112-132.000.
Schneider, Gerhard; Ludwig, Rolf; and Fischer, Jochen, 4,364,318, Cl. 112-147.000.
Luftkonditionering AB: *See*—
Alin, Arne, 4,365,142, Cl. 219-374.000.
Luke, John A.: *See*—
Horsewell, Henry G.; and Luke, John A., 4,364,403, Cl. 131-332.000.
Lundstrom, Stephen F.: *See*—
Barnes, George H.; Lundstrom, Stephen F.; and Shafer, Philip E., 4,365,292, Cl. 364-200.000.
Luthi, Oscar: *See*—
Dussourd, Jules L.; and Luthi, Oscar, 4,364,185, Cl. 34-122.000.
Luyett, Joe G.; Ulrich, Lawrence W.; and Walker, Connie W., to Durable Packaging Corporation. Apparatus for sealing containers. 4,364,219, Cl. 53-374.000.
Lyman, Oscar; and Tiegel, Ralph. Modular fencing assembly. 4,364,546, Cl. 256-24.000.
Lynch, Bobby R.; and Lynch, Robert L. Combined hay bale transporting and unrolling mechanism. 4,364,701, Cl. 414-24.600.
Lynch, Robert L.: *See*—
Lynch, Bobby R.; and Lynch, Robert L., 4,364,701, Cl. 414-24.600.
M.A.N. Maschinenfabrik Ausburg-Nurnberg Aktiengesellschaft: *See*—
Moll, Hans; and Flesche, Klaus, 4,364,599, Cl. 296-190.000.
Maccianti, Tiziano: *See*—
Zanchi, Vittorio; and Maccianti, Tiziano, 4,365,291, Cl. 364-200.000.
MacDonald, John B.; Patberg, John K.; and Raamot, Jaan, to Western Electric Company, Inc. Vector generator for computer graphics. 4,365,305, Cl. 364-521.000.
Mace, Robert E.: *See*—
Clements, Jack T.; and Mace, Robert E., 4,364,758, Cl. 55-365.000.
Machida, Michihide: *See*—
Tabata, Hideyo; Kuwahara, Yoshitaka; Machida, Michihide; Kume, Shyoichi; Iga, Takeo; Saitoh, Kazuo; and Tomura, Shinji, 4,365,022, Cl. 501-97.000.
Machlett Laboratories, Incorporated, The: *See*—
Craig, James R.; and Nerge, Steven F., 4,365,345, Cl. 378-190.000.

Mackie, David R.: *See*—
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,365,295, Cl. 364-200.000.

MacLagen, Robert T.: *See*—
Bast, Eleanor A.; DuBois, Jean-Pierre; and MacLagen, Robert T., 4,365,140, Cl. 219-225.000.

Maclin, Harvey M.: *See*—
Eiswerth, James E.; Lievestro, Louis; Haubert, Richard C.; and Maclin, Harvey M., 4,364,160, Cl. 29-156.80H.

MacMillan Bloedel Limited: *See*—
Schilling, Walter W., 4,364,423, Cl. 144-366.000.

Madigan, Darold L., to PPG Industries, Inc. Process for producing substantially linear carbonate polymer. 4,365,055, Cl. 528-371.000.

Madsen, Kristian D., to ASEA Aktiebolag. Gas-cooled rotor for a turbo-generator. 4,365,177, Cl. 310-61.000.

Maeda, Katsumi, to Star Seimitsu Kabushiki Kaisha. Ink ribbon feeder. 4,364,680, Cl. 400-220.100.

Maeda, Yuji, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Object grasping system. 4,364,593, Cl. 294-106.000.

Mageli, Orville L.: *See*—
McKellin, Wilbur H.; Mageli, Orville L.; and D'Angelo, Antonio J., 4,365,086, Cl. 562-512.000.

Mahoney, Thomas P.: *See*—
Campbell, James R.; and Anspach, Roy L., 4,365,004, Cl. 428-593.000.

Maida, Osamu, to Nippon Kogaku K.K. Digital display circuit displayable in analog fashion. 4,365,236, Cl. 340-347.0AD.

Maier, Roland: *See*—
Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, 4,364,944, Cl. 424-246.000.

Maier, Wolfgang: *See*—
Horter, Hans-Dieter; Maier, Wolfgang; and Seibold, Herbert, 4,364,278, Cl. 73-862.360.

Mainville, Jacques, to Benson & Hedges (Canada) Inc. Tobacco storage bag. 4,364,425, Cl. 150-51.000.

Malik, Marvin J., to General Motors Corporation. Automatic engine shutdown and restart system. 4,364,343, Cl. 123-179.00B.

Malinowski, Christoph: *See*—
Gillessen, Klaus; Rinderle, Heinz; Schairer, Werner; Siegle, Martin; and Malinowski, Christoph, 4,365,244, Cl. 340-782.000.

Malmberg, Paul R.: *See*—
Bluzer, Nathan; Jensen, Arthur S.; Schroder, Dieter K.; and Malmberg, Paul R., 4,364,164, Cl. 29-571.000.

Mamiya, Toshiharu; Yamada, Tateo; Hirohata, Michio; Ogawa, Yukio; and Kimura, Hiroyuki, to Canon Kabushiki Kaisha. Film winding and lens control mechanism for automatically focusing camera. 4,364,649, Cl. 354-25.000.

Mangiavacchi, Jacques, to Glaenzer Spicer. Intermediate bearing support mounting for sectional or articulated drive line. 4,364,613, Cl. 308-184.00R.

Mannesmann-Demag AG: *See*—
Dreesen, Peter; and Kiessling, Klaus, 4,364,704, Cl. 414-624.000.

Manor, Shalom; Bar-Guri, Moshe; Alexandron, Amiad; and Kreisel, Moshe, to Haifa Chemicals Ltd. Process for the manufacture of potassium nitrate with co-production of hydrochloric acid. 4,364,914, Cl. 423-399.000.

Manservisi, Renato; and Zullo, Antonio, to Cir S.p.A. Divisione Sasib. Apparatus for the formation of cigarette groups. 4,364,464, Cl. 198-419.000.

Marcelin, George; Vogel, Roger F.; and Swift, Harold E., to Gulf Research & Development Company. Process for hydrogenating unsaturated compounds. 4,365,095, Cl. 568-462.000.

Marconi Company Limited, The: *See*—
Garner, Frederick, 4,364,628, Cl. 350-500.000.

Marguet, Hugues: *See*—
Bouteille, Daniel; Marguet, Hugues; and Petrimaux, Eric, 4,364,414, Cl. 137-624.140.

Marinkonsult Hans Lundberg AG: *See*—
Stafford, David F., 4,364,563, Cl. 273-26.00R.

Marino, Thomas: *See*—
Veronneau, Marcel; and Marino, Thomas, 4,364,773, Cl. 106-281.00R.

Marion, Charles P.: *See*—
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,364,744, Cl. 48-86.00R.

Marison Company, The: *See*—
Stading, Russell C., 4,364,161, Cl. 29-407.000.

Mark, Victor; and Hedges, Charles V., to General Electric Company. Fluorinated diphenols and method for their preparation. 4,365,098, Cl. 568-726.000.

Marks, Robert J. Bed construction. 4,364,134, Cl. 5-201.000.

Marks, Tobin J.; Cuellar, Edward A.; Miller, Steven S.; and Weitz, Eric, to Northwestern University. One-step syntheses of uranium hexamethoxide and mixed methoxy uranium (VI) fluorides from uranium hexafluoride and two-step synthesis of uranium hexamethoxide from uranium tetrachloride. 4,364,870, Cl. 260-429.100.

Marne Blanco, Federico: *See*—
Mayo Magdaleno, Casimiro, 4,365,179, Cl. 310-81.000.

Marriott, David G.: *See*—
Knight, William; and Marriott, David G., 4,364,449, Cl. 180-271.000.

Martel, Jacques; Tessier, Jean; Girault, Pierre; and Grandadam, Jean A., to Roussel-Uclaf. Novel salts of ion exchange resins of the acid type. 4,364,928, Cl. 424-79.000.

Martelli, Gian N.: *See*—
Nidola, Antonio; and Martelli, Gian N., 4,364,803, Cl. 204-30.000.

Martin, Robert J.: *See*—
Mulholland, Wayne A.; Martin, Robert J.; Wilson, David S.; and Esparza, Carlos, Jr., 4,364,620, Cl. 339-17.0CF.

Martin, William R., to Wangner Systems Corporation. Woven textile dryer fabric and seam and weaving method. 4,364,421, Cl. 139-383.00A.

Maru, Hansraj C.; and Patel, Pinakin S., to Energy Research Corporation. Fuel cell with internal reforming. 4,365,007, Cl. 429-19.000.

Maruyama, Eiichi: *See*—
Ishioka, Sachio; Maruyama, Eiichi; Imamura, Yoshinori; Matsubara, Hirokazu; and Horigome, Shinkichi, 4,365,013, Cl. 430-57.000.

Maruyama, Kazumasa: *See*—
Onda, Yoshiro; Muto, Hiroaki; and Maruyama, Kazumasa, 4,365,060, Cl. 536-65.000.

Masai, Hiroshi: *See*—
Kunimatsu, Yoshio; Okumura, Hajime; Masai, Hiroshi; Yamada, Koki; and Yamada, Mikio, 4,364,960, Cl. 426-17.000.

Masbruch, Richard D.: *See*—
Waldhauser, Steven J. A.; and Masbruch, Richard D., 4,364,138, Cl. 15-50.00R.

Mascher, Karl, to Siemens Aktiengesellschaft. High-voltage circuit breaker. 4,365,128, Cl. 200-148.00F.

Maschinenfabrik Klaus-Gerd Hoes: *See*—
Bruns, Theodor, 4,364,690, Cl. 404-118.000.

Mascitti, Albert A.: *See*—
Sulkowski, Theodore S.; Bergey, James L.; and Mascitti, Albert A., 4,365,063, Cl. 546-123.000.

Mass, Manfred; and Walter, Gunter, to Daimler-Benz AG; and Herberts GmbH. Hollow body suitable for receiving diffusible substances, coated with resin varnish, and a process for its production and its use. 4,364,980, Cl. 428-35.000.

Massachusetts Institute of Technology: *See*—
Eagar, Thomas W.; Kaiser, Joseph G.; and Dunn, Gregory J., 4,365,134, Cl. 219-118.000.
Witt, August F.; and Raman, Ramaswamy V., 4,365,005, Cl. 428-611.000.

Massey-Ferguson Inc.: *See*—
Dwyer, Robert M.; and Skiba, Edwin J., 4,364,231, Cl. 60-577.000.

Massey, Fred L.; and Callander, Douglas D., to Goodyear Tire & Rubber Company, The. Composition and process for making a green colored polyester. 4,365,031, Cl. 524-88.000.

Massey, Lester G.; Brabets, Robert I.; and Abel, William A., to CNG Research Company. Method for removing undesired components from coal. 4,364,740, Cl. 44-1.00C.

Masuda, Noriaki: *See*—
Kohno, Tadashi; Shimizu, Takahiko; Takahashi, Kenji; Fukui, Hishao; Okubo, Akio; and Masuda, Noriaki, 4,364,684, Cl. 401-264.000.

Masugi, Takashi: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,364,943, Cl. 424-246.000.

Materne, Carsten, to Bayer Aktiengesellschaft. Certain 1,4-dihydro-2,6-dimethyl-3,5-pyridine-dicarboxylates, composition containing same and method of use. 4,364,952, Cl. 424-266.000.

Matsu-Ura, Hideaki: *See*—
Shiga, Akinobu; Fukui, Yoshiharu; Sasaki, Toshio; Okawa, Masahisa; Matsu-Ura, Hideaki; and Yamada, Yasuharu, 4,364,851, Cl. 252-429.00B.

Matsubara, Hirokazu: *See*—
Ishioka, Sachio; Maruyama, Eiichi; Imamura, Yoshinori; Matsubara, Hirokazu; and Horigome, Shinkichi, 4,365,013, Cl. 430-57.000.

Matsui, Fujio: *See*—
Shikata, Makoto; and Matsui, Fujio, 4,364,358, Cl. 123-440.000.

Matsumoto, Minoru: *See*—
Sato, Yoshito; and Matsumoto, Minoru, 4,364,443, Cl. 180-9.500.

Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Suzuki, Mituo; and Nakamura, Kenji, to Hitachi, Ltd. Garage door operation control apparatus. 4,365,250, Cl. 340-825.320.

Matsuoka, Tsutomu, to Toyo Kogyo Co., Ltd. Air-fuel ratio control system. 4,364,357, Cl. 123-440.000.

Matsuoka, Yoshitaka: *See*—
Shimazoe, Michitaka; Matsuoka, Yoshitaka; Akahane, Ryozo; Shimizu, Yasushi; Nemoto, Hideyuki; and Tanabe, Masanori, 4,364,276, Cl. 73-721.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Nishioka, Matsuo, 4,365,231, Cl. 338-334.000.
Sugino, Takashi; Shimizu, Hirokazu; Wada, Masaru; and Itoh, Kunio, 4,365,336, Cl. 372-45.000.

Matsuyama, Masahiro: *See*—
Tsuzuki, Yoshihiko; Hirabayashi, Yuzi; Shirasaki, Shinji; Matsuyama, Masahiro; and Okazaki, Hiroshi, 4,364,513, Cl. 236-49.000.

Matsuyama, Shigeru; and Sasaki, Ken, to Hitachi, Ltd. Method of fabricating liquid crystal display cell. 4,364,168, Cl. 29-592.00R.

Mattel, Inc.: *See*—
Inayat-Khan, Gayan, 4,364,619, Cl. 339-17.00F.

Matumoto, Shiyouichi: *See*—
Shimizu, Noboru; Yoshida, Hiroshi; Daigo, Hiromiki; Matumoto, Shiyouichi; and Uchino, Hiroyoshi, 4,365,081, Cl. 560-209.000.

May, John B.: *See*—
DiMassimo, Donald V.; and May, John B., 4,365,203, Cl. 328-63.000.

Mayo Magdaleno, Casimiro, to Marne Blanco, Federico; and de Onate Fernandez de Gamboa, Gonzalo, part interest to each. Pulse motor. 4,365,179, Cl. 310-81.000.

Mayumi, Masakatsu; Okuyama, Takeshi; and Mitooka, Kenji, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Method for molding a reinforced plastic tubular body having a socket, and mold therefore. 4,364,894, Cl. 264-334.000.

McBride, Alistair D.; and Ripley, Ian S., to Emultec Limited. Recovery of heavy hydrocarbons from oil sludge. 4,364,776, Cl. 134-10.000.

McCann, Frederick. Automotive onboard fuel production system. 4,364,337, Cl. 123-3.000.

McClean, John W. Blade attachment for food processor. 4,364,525, Cl. 241-92.000.

McCue, Maurice H. Gun rack for police car. 4,364,499, Cl. 224-42.45R.

McDaniel, Max P.; and Johnson, Marvin M., to Phillips Petroleum Company. Catalyst comprising chromium on silica/phosphate support. 4,364,839, Cl. 252-430.000.

McDaniel, Max P.; and Johnson, Marvin M., to Phillips Petroleum Company. Phosphated silica-chromium catalyst with boron-containing cocatalyst. 4,364,840, Cl. 252-430.000.

McDaniel, Max P.; and Johnson, Marvin M., to Phillips Petroleum Company. Phosphate containing support with zerovalent chromium. 4,364,841, Cl. 252-430 000.

McDaniel, Max P.; and Johnson, Marvin M., to Phillips Petroleum Company. Phosphate supported chromium catalyst. 4,364,842, Cl. 252-430.000.

McDaniel, Max P.; and Johnson, Marvin M., to Phillips Petroleum Company. Acid gelling aluminum phosphate from concentrated mass and catalyst containing same. 4,364,854, Cl. 252-437.000.

McDaniel, Max P.; and Johnson, Marvin M., to Phillips Petroleum Company. Production of aluminum phosphate from concentrated mass. 4,364,855, Cl. 252-437.000.

McDaniel, Wharton; Brown, Fred A.; and Thompson, Donald, to Rotron Incorporated. Brushless D.C. motor. 4,365,187, Cl. 318-254.000.

McDonnell Douglas Corporation: *See*—
Byrd, Norman R.; and Peek, Daniel C., 4,364,991, Cl. 428-265.000.
Reizer, Robert F.; Koivu, Albert H.; and Cohen, Leslie J., 4,365,029, Cl. 523-437.000.

McEvoy, Dennis L.: *See*—
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,365,295, Cl. 364-200.000.

McKee, Kimball K., to Elreco Corporation, The. Modular section insulator switch. 4,365,129, Cl. 200-162.000.

McKellin, Wilbur H.; Mageli, Orville L.; and D'Angelo, Antonio J., to Pennwalt Corporation. Polyperoxy compounds. 4,365,086, Cl. 562-512.000.

McMahon, Paul E.: *See*—
Edelman, Robert; McMahon, Paul E.; and Daumit, Gene P., 4,364,993, Cl. 428-288.000.

McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S. Apparatus and method for handling heated glass sheets. 4,364,765, Cl. 65-106.000.

McNair, Douglas S., to Baylor College of Medicine. Nuclear magnetic resonance sample tube insert. 4,365,199, Cl. 324-318.000.

McRae, Daniel D.; Clark, George C.; and Szuchy, Nicholas C., to Harris Corporation. Technique for high rate digital transmission over a dynamic dispersive channel. 4,365,338, Cl. 375-12.000.

McVicker, Harry J., to Sperry Corporation. Combination castor and jack means apparatus. 4,364,148, Cl. 16-32.000.

McWilliams, Joseph A., to Micropore International Ltd. Shaping of thermal insulation material. 4,365,135, Cl. 219-121.0LF.

Meacham, John W.: *See*—
Kazlauskas, Gasparas; Jusionis, Vytautas J.; Westerberg, Max M.; and Meacham, John W., 4,365,132, Cl. 219-60.00A.

Mead Corporation, The: *See*—
Crutchfield, E. Bryant; Wright, Richard F.; Adair, Paul C.; Harris, Seth O.; Shackle, Dale R.; and Williams, Dennis L., 4,365,018, Cl. 430-139.000.
Holley, John M., Jr.; and Oliff, James R., 4,364,509, Cl. 229-17.00B.

Meckel, Bernd: *See*—
Schulz, Siegfried; Stroppel, Karl-Gunter; and Meckel, Bernd, 4,364,240, Cl. 62-476.000.

Medi-Physics, Inc.: *See*—
Winchell, Harry S., 4,364,920, Cl. 424-1.000.

Medtronic, Inc.: *See*—
Barthel, Thomas C., 4,364,396, Cl. 128-419.0PT.
Citron, Paul; Hepp, Dennis G.; and Jirak, Thomas L., 4,364,397, Cl. 128-710.000.
Nelms, George E.; Barthel, Thomas C.; and Bergland, William J., 4,365,290, Cl. 364-200.000.

Mehta, Avinash C., to Polaroid Corporation. Biphenyl aldehydes. 4,365,072, Cl. 549-415.000.

Meier, James, to Norlin Industries, Inc. Keyboard spring return mechanism. 4,364,297, Cl. 84-440.000.

Meiller, Hermann, to Grammer, Willibald. Seat with a seat plate of adjustable inclination and a backrest of adjustable inclination. 4,364,605, Cl. 297-306.000.

Melendez, Ricardo. Skate sandals. 4,364,187, Cl. 36-15.000.

Memoteknik AB: *See*—
Oja, Viktor; and Wikstrom, Sigvard, 4,364,676, Cl. 374-44.000.

Menasse, Raphael: *See*—
Muntwyler, Rene; and Menasse, Raphael, 4,364,949, Cl. 424-263.000.

Mendiratta, Ashok K.: *See*—
Faler, Gary R.; and Mendiratta, Ashok K., 4,365,099, Cl. 568-726.000.

Menezes, William A.; and Kuper, Douglas D., to Sony Corporation. Cue control apparatus. 4,365,313, Cl. 364-900.000.

Menk, Hermann: *See*—
Muller, Hanns P.; Wagner, Kuno; Blahak, Johannes; and Menk, Hermann, 4,365,000, Cl. 428-423.900.

Mennen, Ulrich. Internal fixation device for bone fractures. 4,364,382, Cl. 128-92.00D.

Mennona, Francis A.: *See*—
Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,365,070, Cl. 549-263.000.

Merriaux, Philippe M. F.; and Nicolas, Jean-Yves, to Thomson-CSF Telephone. Device for switching digital data. 4,365,328, Cl. 370-60.000.

Metzeler Kautschuk GmbH: *See*—
Muller, Hanns P.; Wagner, Kuno; Blahak, Johannes; and Menk, Hermann, 4,365,000, Cl. 428-423.900.

Meyer, Danny S., to ACF Industries, Incorporated. Packing gland assembly. 4,364,542, Cl. 251-214.000.

Meyer, Geerd-J.; and Lambrecht, Richard M., to United States of America, Energy. Method for the preparation of radon-211. 4,364,898, Cl. 376-190.000.

Meyer, Nicolas; and Cousin, Michel, to Societe Chimique Des Charbonnages. Laminates of improved fire resistance. 4,365,001, Cl. 428-480.000.

Meyer, Raymond A.: *See*—
Morgan, Cleon; Thomas, John F., Jr.; and Meyer, Raymond A., 4,364,595, Cl. 296-84.00R.

Meyers, George, to Garber Company, The. Feeding device. 4,364,504, Cl. 226-76.000.

Michaelis, Theodore D., to RCA Corporation. Eccentricity control device. 4,365,324, Cl. 369-44.000.

Mickley, Harold S.: *See*—
Caffy, Russell B.; Carron, Mark S.; Hull, Robert W.; Jain, Pawan K.; and Mickley, Harold S., 4,364,911, Cl. 423-317.000.

Micropore International Ltd.: *See*—
McWilliams, Joseph A., 4,365,135, Cl. 219-121.0LF.

Mikiya, Toshio: *See*—
Takeuchi, Hirosato; Degawa, Fumito; and Mikiya, Toshio, 4,364,373, Cl. 126-418.000.

Miles, Wilbur N., to Erickson Tool Company. Tap holder. 4,364,694, Cl. 408-139.000.

Miller, David H.: *See*—
Raynes, Stephen H.; and Miller, David H., 4,364,493, Cl. 222-399.000.

Miller, George R., to United States of America, Navy. Emergency lighting unit. 4,365,232, Cl. 340-27.00R.

Miller, Marvin L.: *See*—
Weldon, Clark P.; Wolfson, Stephen L.; and Miller, Marvin L., 4,365,191, Cl. 324-71.00R.

Miller, Robert C., to Westinghouse Electric Corp. Electrically driven meter totalizing device. 4,365,251, Cl. 340-870.020.

Miller, Steven S.: *See*—
Marks, Tobin J.; Cuellar, Edward A.; Miller, Steven S.; and Weitz, Eric, 4,364,870, Cl. 260-429.100.

Milliken Research Corporation: *See*—
Frentress, Zane, 4,364,502, Cl. 226-45.000.
Frentress, Zane, 4,365,145, Cl. 235-92.0CT.
Greenway, John M.; and Stokes, Jimmy L., 4,364,156, Cl. 26-2.00R.

Mills, Allen P., Jr., to Bell Telephone Laboratories, Incorporated. Brightness enhancement of positron sources. 4,365,160, Cl. 250-396.00R.

Mills, Anthony M.; and Egan, Daniel C., to Dunlop Tire & Rubber Corporation. Motorcycle tire tread. 4,364,426, Cl. 152-209.00R.

Mimoun, Hubert: *See*—
Laloz, Jean P.; Mimoun, Hubert; Rouxel, Jean J.; and Saussine, Lucien, 4,365,082, Cl. 560-243.000.

Minagawa, Shoichi; Okamoto, Takeshi; and Sakai, Takamasa, to Clarion Co., Ltd. Surface-acoustic-wave device. 4,365,216, Cl. 333-153.000.

Ministry of International Trade & Industry: *See*—
Maeda, Yuji, 4,364,593, Cl. 294-106.000.
Tabata, Hideyo; Kuwahara, Yoshitaka; Machida, Michihide; Kume, Shyoichi; Iga, Takeo; Saitoh, Kazuo; and Tomura, Shinji, 4,365,022, Cl. 501-97.000.

Mink, Robert I.; and Epstein, Ronald A., to Stauffer Chemical Company. Catalyst for polymerizing olefins. 4,364,853, Cl. 252-429.00B.

Minnesota Mining and Manufacturing Company: *See*—
Crawford, George H.; Downing, Edward J.; and Schlemmer, Roy G., 4,364,995, Cl. 428-336.000.
Fleming, Peter B.; Licht, Richard R.; and Peisert, Joseph C., 4,364,210, Cl. 52-221.000.
Gerfast, Sten R., 4,365,257, Cl. 346-135.100.
Huntley, Ted R., 4,364,622, Cl. 339-97.00R.
Moon, John D., 4,364,972, Cl. 427-54.100.

Minolta Camera Kabushiki Kaisha: *See*—
Yuasa, Yoshio; Kisanuki, Toru; and Shirai, Susumu, 4,364,662, Cl. 356-225.000.

Minster Machine Company, The: *See*—
Schockman, Robert L., 4,364,505, Cl. 226-154.000.

Misaka, Eiichi: *See*—
Terada, Atsusuke; Tanaka, Shigeru; and Misaka, Eiichi, 4,365,076, Cl. 560-51.000.

Mitooka, Kenji: *See*—
Mayumi, Masakatsu; Okuyama, Takeshi; and Mitooka, Kenji, 4,364,894, Cl. 264-334.000.

Mitra, Gautam; Coan, Michael H.; and Wada, Shohachi, to Cutter Laboratories, Inc. Blood-coagulation-promoting products and methods of preparing them. 4,364,861, Cl. 260-112.00B.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Morishita, Mitsuharu, 4,365,241, Cl. 340-636.000.
Nakano, Nobumasa; Takahashi, Noboru; and Aoki, Masao, 4,365,312, Cl. 364-900.000.
Okamoto, Kouichi; Sakuyama, Masaki; and Kataoka, Kenji, 4,364,241, Cl. 62-505.000.

Mitsubishi Petrochemical Company Limited: *See*—
Kadowaki, Koju; Sarumaru, Kohei; and Shibano, Takeshi, 4,365,087, Cl. 562-534.000.

Mitsui Kinzoku Kogyo Kabushiki Kaisha: *See*—
Hamada, Yoshikazu, 4,364,590, Cl. 292-336.300.

Mitsui Toatsu Chemicals, Incorporated: *See*—
Asano, Shiro, 4,365,090, Cl. 564-127.000.
Ohkawa, Kóue; Fujii, Shin; and Seino, Takashi, 4,365,047, Cl. 525-447.000.
Ono, Hiroshi; Fujii, Hidetsugu; and Inoue, Shigeru, 4,365,089, Cl. 564-67.000.

Mittelstaedt, Paul O.: *See*—
Arabshian, John; and Mittelstaedt, Paul O., 4,364,700, Cl. 414-24.500.

Miyagi, Hideo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of adjusting idle speed of an internal combustion engine. 4,364,347, Cl. 123-339.000.

Miyagi, Hideo; and Suematsu, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method for controlling the operation of the fuel injector in a fuel injection type internal combustion engine during a deceleration condition of the engine. 4,364,349, Cl. 123-339.000.

Miyagi, Hideo; and Nakano, Jiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Electronically controlling, fuel injection method for internal combustion engine. 4,364,363, Cl. 123-492.000.

Miyazaki, Toshikuni: *See*—
Nomura, Etsuji; Sasaya, Hideaki; and Miyazaki, Toshikuni, 4,364,369, Cl. 123-569.000.

Miyazaki, Yoshihiro: *See*—
Noguchi, Atomi; Ide, Jushi; Kuwahara, Hiroshi; and Miyazaki, Yoshihiro, 4,365,309, Cl. 364-702.000.

Miyazawa, Shozo: *See*—
Nagata, Masayuki; and Miyazawa, Shozo, 4,365,115, Cl. 179-15.55T.

Mizik, Valery V.: *See*—
Tarasov, Nikolai M.; Varukha, Nikolai A.; Brontman, Rostislav L.; Slesarev, Boris A.; Zhukov, Anatoly M.; Mizik, Valery V.; Rogachev, Evgeny P.; and Gurnov, Nikolai I., 4,365,137, Cl. 219-137.310.

Mizuno, Hiroshige; and Kurishita, Akiyoshi, to NGK Insulators, Ltd. Continuous extrusion method of manufacturing ceramic honeycomb structures with the aid of screw type vacuum extruding machine. 4,364,881, Cl. 264-40.700.

Moberly, Robert V.: *See*—
Chopping, Geoffrey; Moberly, Robert V.; and Philip, Alexander S., 4,365,330, Cl. 370-100.000.

Mobil Oil Corporation: *See*—
Espenscheid, Wilton F., 4,364,918, Cl. 423-573.00R.
Kaeding, Warren W., 4,365,104, Cl. 585-467.000.
Young, Lewis B., 4,365,083, Cl. 560-247.000.
Young, Lewis B., 4,365,084, Cl. 560-247.000.

Modtler, Reiner: *See*—
Brucher, Walter; Hense, Karl H.; and Modtler, Reiner, 4,364,983, Cl. 428-85.000.

Mogami, Satoshi, to Nippon Kogaku K.K. Wide angle zoom lens. 4,364,641, Cl. 350-426.000.

Moiseevich, Shutov G.: *See*—
Prokofievna, Skripchik L.; Moiseevich, Shutov G.; Emmanuilovna, Erdman M.; Eduardovich, Pukhalsky M.; Ivanovich, Lezhen V.; Ignatievich, Shevchenko A.; and Vladimirovich, Vrublevsky E., 4,364,976, Cl. 427-382.000.

Mojden, Wallace W., to Fleetwood Systems, Inc. Can end separator-conveyor. 4,364,466, Cl. 198-459.000.

Moll, Hans; and Flesche, Klaus, to M.A.N. Maschinenfabrik Ausburg-Nurnberg Aktiengesellschaft. Truck, especially a large capacity vehicle or tractor semi-trailer combination. 4,364,599, Cl. 296-190.000.

Momiyama, Kikuo, to Canon Kabushiki Kaisha. Large aperture ratio photographic lens. 4,364,643, Cl. 350-464.000.

Momobayashi, Tatuya: *See*—
Takenaka Masaaki; Takahashi, Tsutomu; and Momobayashi, Tatuya, 4,365,091, Cl. 564-127.000.

Monarch Marking Systems, Inc.: *See*—
Ivary, David J.; and Kirby, Raymond L., Jr., 4,364,503, Cl. 226-45.000.

Monden, Ikuo: *See*—
Tsujita, Kaoru; Tobioka, Sigeki; and Monden, Ikuo, 4,365,265, Cl. 358-29.000.

Monforts, A.: *See*—
Van Wersch, Kurt; and Pabst, Manfred, 4,364,784, Cl. 156-78.000.

Mongeon, Ronald W., to Stellar Systems, Inc. Intrusion warning system. 4,365,239, Cl. 340-564.000.

Monsanto Company: *See*—
Brooks, Albert A.; Henis, Jay M. S.; and Tripodi, Mary K., 4,364,759, Cl. 55-487.000.
Frushour, Bruce G., 4,364,675, Cl. 374-16.000.
Howe, Robert K.; and Liu, Kou-Chang, 4,364,768, Cl. 71-88.000.

Montabert, Roger, to Etablissements Montabert S.A. Support-arm assembly for a drill or borer, particularly for subterranean applications. 4,364,540, Cl. 248-654.000.

Montgomery Elevator Company: *See*—
Seaholm, Reuel A.; and Smith, Stephen W., 4,364,203, Cl. 49-409.000.

Moon, John D., to Minnesota Mining and Manufacturing Company. Pressure-sensitive adhesive copolymers of acrylic acid ester and N-vinyl pyrrolidone. 4,364,972, Cl. 427-54.100.

Moore, Ernest P.: *See*—
Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,365,119, Cl. 179-170.200.

Moore, Richard D.: *See*—
Davis, Donald E.; Moore, Richard D.; Ryan, Philip M.; and Weber, Edward V., 4,365,163, Cl. 250-491.100.

Moore, Robert L.: *See*—
John, Raymond; Apfelbaum, Jerome G.; and Moore, Robert L., 4,364,308, Cl. 99-351.000.

Moran, Eric, to P.V. Trim Limited. Method of making laterally curved decorative trim strip assembly. 4,364,789, Cl. 156-214.000.

Morgan, Cleon; Pluta, Richard; and Thomas, John F., Jr., to Donnelly Mirrors, Inc. Decorative panel assembly for vehicles. 4,364,214, Cl. 52-311.000.

Morgan, Cleon; Thomas, John F., Jr.; and Meyer, Raymond A., to Donnelly Mirrors, Inc. Vehicle window assembly. 4,364,595, Cl. 296-84.00R.

Morganson, Neal E.; and Bercik, Paul G., to Gulf Research & Development Company. Oligomerizing 1-olefins with a heterogeneous catalyst. 4,365,105, Cl. 585-525.000.

Morifuji, Yoshinori: *See*—
Yosizato, Akihiko; Morifuji, Yoshinori; Kondo, Kunio; and Yoshino, Masatsugu, 4,365,032, Cl. 524-99.000.

Morisawa, Kunio; and Kyushima, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic transmission. 4,364,285, Cl. 74-606.00R.

Morishita, Mitsuharu, to Mitsubishi Denki Kabushiki Kaisha. Device for indicating the charging state of a battery. 4,365,241, Cl. 340-636.000.

Morita, Masayuki; Kubota, Kazuhisa; and Nakano, Tasuku, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Turn direction detector for a steering shaft. 4,365,121, Cl. 200-61.270.

Moriwaki, Takeshi; and Tsunekawa, Shinichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for stabilizing the pressure of a gas in a closed body. 4,364,617, Cl. 316-24.000.

Moriyama, Yutaka: *See*—
Soma, Hiroshi; Iyobe, Makoto; Iijima, Takekazu; and Moriyama, Yutaka, 4,365,113, Cl. 179-1.00E.

Morley Furniture Spring Corporation: *See*—
Crosby, Lawton H., 4,364,547, Cl. 267-110.000.

Morrison, Thomas R. Zone heat control. 4,364,512, Cl. 236-9.00A.

Morton, Douglas R., Jr., to Upjohn Company, The. ω-Aryl-PGD compounds. 4,365,075, Cl. 560-51.000.

Morz, Gunter, to Licentia Patent-Verwaltungs-GmbH. Antenna feeder system for a tracking antenna. 4,365,253, Cl. 343-786.000.

Moss, Theron C.; Mullan, Richard; Boring, Earl; Hjellum, Jerry; and Christison, Alexander, to SECO Industries, Inc. Duster head and method of making same. 4,364,144, Cl. 15-229.0AC.

Mostek Corporation: *See*—
Mulholland, Wayne A.; Martin, Robert J.; Wilson, David S.; and Esparza, Carlos, Jr., 4,364,620, Cl. 339-17.0CF.

Motkowski, Henry F., Jr.: *See*—
Sipos, Tibor; and Motkowski, Henry F., Jr., 4,364,927, Cl. 424-56.000.

Motohashi, Katsuichi; Obara, Toshio; Kaneko, Kazuo; and Yamaguchi, Masahiko, to Hodogaya Chemical Co., Ltd. Heat sensitive record sheet. 4,364,999, Cl. 428-411.000.

Motorola Canada Limited: *See*—
Vizmuller, Peter, 4,365,221, Cl. 333-202.000.

Motorola Inc.: *See*—
Hansen, Kenneth A.; and Chapman, Ronald H., 4,365,213, Cl. 331-113.00R.
Harrington, Wayne D.; and Groves, Stanley E., 4,365,210, Cl. 331-1.00A.

Mott, Donna M.: *See*—
Halpern, Yuval; and Mott, Donna M., 4,365,033, Cl. 524-118.000.

Mottu, Pierre, executor: *See*—
Winter, Max, deceased; and Mottu, Pierre, executor, 4,364,400, Cl. 131-277.000.

Moutonnier, Claude: *See*—
Farge, Daniel; Moutonnier, Claude; Le Roy, Pierre; and Peyronel, Jean-Francois, 4,365,062, Cl. 544-22.000.

Moyle, LaMont E., to Rexham Corporation. Snack food packaging material. 4,364,989, Cl. 428-216.000.

Mozai, Toshimitsu: *See—*
Fujimoto, Michitaro; Fukui, Takaichi; Mozai, Toshimitsu; and Funazo, Yoshikazu, 4,365,067, Cl. 548-342.000.

MTD Products Inc.: *See—*
Plamper, Gerhard R.; Fortlage, Paul R.; and Kaesgen, Hans-Hartmut, 4,364,735, Cl. 474-14.000.

Muchel, Franz: *See—*
Lang, Walter H.; and Muchel, Franz, 4,364,629, Cl. 350-516.000.

Mukai, Kiichiro; Harada, Seiki; Muramatsu, Shin-ichi; Hiraiwa, Atsushi; Takahashi, Shigeru; Usami, Katsuhisa; Iwata, Seiichi; Ito, Satoru; and Yoshimi, Takeo, to Hitachi, Ltd. Semiconductor device with high density low temperature deposited $Si_wN_xH_yO_z$ passivating layer. 4,365,264, Cl. 357-54.000.

Mulholland, Wayne A.; Martin, Robert J.; Wilson, David S.; and Esparza, Carlos, Jr., to Mostek Corporation. Socket for housing a plurality of integrated circuits. 4,364,620, Cl. 339-17.0CF.

Mullan, Richard: *See—*
Moss, Theron C.; Mullan, Richard; Boring, Earl; Hjellum, Jerry; and Christison, Alexander, 4,364,144, Cl. 15-229.0AC.

Muller, Hanns P.; Wagner, Kuno; Blahak, Johannes; and Menk, Hermann, to Metzeler Kautschuk GmbH. Molded bodies of vulcanized rubber having a vulcanized-on layer of varnish. 4,365,000, Cl. 428-423.900.

Muller, Manfred: *See—*
Klausecker, Karl; and Muller, Manfred, 4,365,286, Cl. 363-58.000.

Muller, Wolfgang: *See—*
Diehl, Erwin; Muller, Wolfgang; and Stroh, Artur, 4,364,978, Cl. 427-433.000.

Muller, Wolfgang H. E.; and Hofmann, Peter, to Chemische Werke Huls A.G. Process for producing alkyl esters of saturated aliphatic carboxylic acids. 4,364,869, Cl. 260-410.90R.

Mullowney, Robert A.: *See—*
Donato, Guido A.; Hammond, Edwin E.; and Mullowney, Robert A., 4,364,444, Cl. 180-65.00R.

Multisensors Inc.: *See—*
John, Raymond; Apfelbaum, Jerome G.; and Moore, Robert L., 4,364,308, Cl. 99-351.000.

Mulvey, Steven J., to National Railroad Passenger Corporation. Test signal generator. 4,365,333, Cl. 371-27.000.

Mummert, Thomas A., to Jobst Institute, Inc. Artificial foot. 4,364,128, Cl. 3-6.100.

Muns-Magem, Joaquin; and Ibanez-Pi, Juan. Yarn condition sensing device. 4,364,247, Cl. 66-163.000.

Munter, Arnold M.; and Ahlgren, David W., to Jeno's, Inc. Food preparation process. 4,364,963, Cl. 426-283.000.

Muntwyler, Rene; and Menasse, Raphael, to Ciba-Geigy Corporation. Hydroxyphenyl ketones. 4,364,949, Cl. 424-263.000.

Murai, Keiichi; Tanaka, Naoto; and Kondo, Hideyo, to Canon Kabushiki Kaisha. Electrophotographic device. 4,364,329, Cl. 118-652.000.

Murakami, Hiroyashu: *See—*
Kawamura, Masaharu; Sakurada, Nobuaki; Shinoda, Nobuhiko; Ito, Tadashi; Ito, Fumio; and Murakami, Hiroyashu, 4,364,647, Cl. 354-23.00D.

Muramatsu, Shin-ichi: *See—*
Mukai, Kiichiro; Harada, Seiki; Muramatsu, Shin-ichi; Hiraiwa, Atsushi; Takahashi, Shigeru; Usami, Katsuhisa; Iwata, Seiichi; Ito, Satoru; and Yoshimi, Takeo, 4,365,264, Cl. 357-54.000.

Muranaka, Shigeo; and Onoda, Michio, to Nissan Motor Company, Ltd. Vibration sensor for an automotive vehicle engine. 4,364,259, Cl. 73-35.000.

Murata Manufacturing Co., Ltd.: *See—*
Inoue, Jiro, 4,365,218, Cl. 333-187.000.
Yamamoto, Takashi, 4,365,181, Cl. 310-320.000.

Murch, Robert M.; and Wood, Louis L., to W. R. Grace & Co. Flexible polyurethane foams from polymethylene polyphenyl isocyanate containing prepolymers. 4,365,025, Cl. 521-159.000.

Murray, Bruce J.: *See—*
Detty, Michael R.; Murray, Bruce J.; and Perlstein, Jerome H., 4,365,016, Cl. 430-83.000.
Detty, Michael R.; Murray, Bruce J.; and Perlstein, Jerome H., 4,365,017, Cl. 430-83.000.

Muto, Hiroaki: *See—*
Onda, Yoshiro; Muto, Hiroaki; and Maruyama, Kazumasa, 4,365,060, Cl. 536-65.000.

N.E.R.G. Enterprises, Inc.: *See—*
Askwith, Herbert; and Sage, Larry, 4,364,261, Cl. 73-40.000.

Nabisco, Inc.: *See—*
Kraft, George R.; Cole, Albert V.; and Kimbrel, Henry E., 4,364,465, Cl. 198-452.000.

Nagai, Kiyotake, to Nippon Electric Co., Ltd. Television camera apparatus having automatic gain-selecting unit. 4,365,272, Cl. 358-228.000.

Nagasawa, Mitsuru: *See—*
Fujimoto, Teruo; Nagasawa, Mitsuru; and Ohno, Syotaro, 4,365,023, Cl. 521-32.000.

Nagata, Masayuki; and Miyazawa, Shozo, to Kanbayashi Seisakujo Company, Ltd. Time-axis compression-expansion devices for sound signals. 4,365,115, Cl. 179-15.55T.

Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument having system for judging player's performance. 4,364,299, Cl. 84-478.000.

Nakade, Toshiaki: *See—*
Yamada, Mitsuhiko; and Nakade, Toshiaki, 4,365,273, Cl. 358-260.000.

Nakagawa, Tsuneo; Hiramatsu, Uji; and Honda, Toshihide, to Daikin Kogyo Co., Ltd. Process for preparing benzotrifluoride and its derivatives. 4,365,101, Cl. 570-145.000.

Nakagawa, Yasuhiko: *See—*
Tsutsumi, Saburo; and Nakagawa, Yasuhiko, 4,364,345, Cl. 123-198.00F.

Nakahama, Kazuo: *See—*
Asai, Mitsuko; Nakahama, Kazuo; and Izawa, Motowo, 4,364,866, Cl. 260-239.30P.

Nakajima, Tsuneo: *See—*
Nakamura, Yukinobu; Nakajima, Tsuneo; Atsumi, Toru; and Sakai, Kunitaka, 4,364,429, Cl. 165-28.000.

Nakamura, Hiroshi: *See—*
Adachi, Tuneyuki; and Nakamura, Hiroshi, 4,365,037, Cl. 524-449.000.

Nakamura, Kenji: *See—*
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Suzuki, Mituo; and Nakamura, Kenji, 4,365,250, Cl. 340-825.320.

Nakamura, Yukinobu; Nakajima, Tsuneo; Atsumi, Toru; and Sakai, Kunitaka, to Honda Giken Kogyo Kabushiki Kaisha. Automatic temperature control system for vehicle air conditioners. 4,364,429, Cl. 165-28.000.

Nakano, Jiro: *See—*
Miyagi, Hideo; and Nakano, Jiro, 4,364,363, Cl. 123-492.000.

Nakano, Nobumasa; Takahashi, Noboru; and Aoki, Masao, to Mitsubishi Denki Kabushiki Kaisha. Sequence controller. 4,365,312, Cl. 364-900.000.

Nakano, Tasuku: *See—*
Morita, Masayuki; Kubota, Kazuhisa; and Nakano, Tasuku, 4,365,121, Cl. 200-61.270.

Nakano Vinegar Co., Ltd.: *See—*
Kunimatsu, Yoshio; Okumura, Hajime; Masai, Hiroshi; Yamada, Koki; and Yamada, Mikio, 4,364,960, Cl. 426-17.000.

Nakauchi, Kenji: *See—*
Terashita, Takaaki; Shiota, Kazuo; and Nakauchi, Kenji, 4,364,650, Cl. 354-31.000.

Nakazawa, Hiroshi: *See—*
Ohsawa, Mitsuo; and Nakazawa, Hiroshi, 4,365,326, Cl. 369-268.000.

Nakhle, George D.; Bell, Cecil R.; Edwards, Arthur R.; Lathery, Willie M.; and Patel Navin D., to Consolidated Foods Corporation. Garment toe closing system. 4,364,320, Cl. 112-262.200.

Namiki, Yasuomi, to Victor Company Of Japan, Ltd. Device for detecting the position of a tape in a magnetic tape recording and/or reproducing apparatus. 4,365,277, Cl. 360-72.100.

Narasaka, Shin: *See—*
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,364,359, Cl. 123-440.000.

Narducy, Kenneth W.: *See—*
Arbir, Francis W.; Raden, Daniel S.; and Narducy, Kenneth W., 4,364,850, Cl. 252-426.000.

Naruchi, Tatsuyuki: *See—*
Kiyoki, Mamoru; Endo, Hiroyoshi; Naruchi, Tatsuyuki; and Hashimoto, Yoshinobu, 4,364,941, Cl. 424-236.000.

Nathan, Bernard D., to General Electric Company. In-line surface acoustic wave filter assembly module and method of making same. 4,365,219, Cl. 333-193.000.

Nathenson, Richard D.; Pipich, Charles W.; and Kopnitsky, Joseph R., deceased (by Kopnitsky, Mary C., executrix), to Westinghouse Electric Corp. Liquid cooling system for a hydrogenerator rotor. 4,365,176, Cl. 310-54.000.

National Gypsum Company: *See—*
Kennedy, Arthur E., 4,364,795, Cl. 162-158.000.
Pearson, Robert J.; and Buergin, Rodney G., 4,364,212, Cl. 52-281.000.

National Iranian Oil Company: *See—*
Saidi, Ali M.; and Hesselink, Frans T., 4,364,431, Cl. 166-275.000.

National Railroad Passenger Corporation: *See—*
Mulvey, Steven J., 4,365,333, Cl. 371-27.000.

National Research Development Corporation: *See—*
Froome, Keith D., 4,364,271, Cl. 73-432.00R.

National Semiconductor Corporation: *See—*
Bernardi, Carl E., 4,364,977, Cl. 427-429.000.

Nattrass, Peter J., to Bulk Lift International, Inc. End wall closure for bulk material transport bag. 4,364,424, Cl. 150-1.000.

Naturin-Werk Becker & Co.: *See—*
Wittern, Hans-Dieter; and Geyer, Fred, 4,364,511, Cl. 229-63.000.

Ned Strongin Associates, Inc.: *See—*
Kleve, Mary, 4,364,195, Cl. 46-135.00R.

Neiss, Edward S.; and Loev, Bernard, to USV Pharmaceutical Corporation. Compositions for treating acne. 4,364,940, Cl. 424-230.000.

Neles Oy: *See—*
Polon, Juhani, 4,364,415, Cl. 137-625.320.

Nelms, George E.; Barthel, Thomas C.; and Bergland, William J., to Medtronic, Inc. Computer system with power control circuit. 4,365,290, Cl. 364-200.000.

Nelson-Harkins Industries, Inc.: *See—*
Harkins, Thomas G.; and Peterson, Robert D., 4,364,616, Cl. 312-223.000.

Nelson Irrigation Corporation: *See—*
Kreitzberg, Jeffrey P., 4,364,519, Cl. 239-230.000.

Nemoto, Hideyuki: *See—*
Shimazoe, Michitaka; Matsuoka, Yoshitaka; Akahane, Ryozo; Shimizu, Yasushi; Nemoto, Hideyuki; and Tanabe, Masanori, 4,364,276, Cl. 73-721.000.

Nemoto, Shin: *See*—
Tatsuwaki, Masao; Nemoto, Shin; Katayama, Yutaka; Okada, Michio; and Hotta, Kazuyuki, 4,365,307, Cl. 364-557.000.
Nerge, Steven F.: *See*—
Craig, James R.; and Nerge, Steven F., 4,365,345, Cl. 378-190.000.
Nestier Canada Inc.: *See*—
Alexeeff, Victor, 4,364,489, Cl. 220-334.000.
Netti, Thomas J. Storm unit for existing window. 4,364,198, Cl. 49-62.000.
Neuhierl, Hermann. Game apparatus with toy vehicles. 4,364,566, Cl. 273-86.00B.
Newton, Barry P.: *See*—
Kettle, Leslie J.; and Newton, Barry P., 4,365,287, Cl. 363-94.000.
NGK Insulators, Ltd.: *See*—
Higuchi, Noboru; Yano, Teruo; and Ohnishi, Masahiro, 4,364,760, Cl. 55-523.000.
Mizuno, Hiroshige; and Kurishita, Akiyoshi, 4,364,881, Cl. 264-40.700.
N'Guyen, Thanh-Dung: *See*—
Boileau, Sylvie L.; N'Guyen, Thanh-Dung; and Gautier, Jean-Claude C., 4,365,094, Cl. 568-14.000.
NHK Spring Co., Ltd.: *See*—
Ohno, Akira; Katayama, Shitomi; Senaha, Susumu; Kyo, Suizo; and Akagami, Akira, 4,364,637, Cl. 350-288.000.
Nichols, James M.: *See*—
Arp, George F.; and Nichols, James M., 4,364,211, Cl. 52-245.000.
Nicolas, Jean-Yves: *See*—
Merriaux, Philippe M. F.; and Nicolas, Jean-Yves, 4,365,328, Cl. 370-60.000.
Nidola, Antonio; and Martelli, Gian N., to Oronzio de Nora Impianti Elettrochimici S.p.A. Deposition of catalytic electrodes on ion-exchange membranes. 4,364,803, Cl. 204-30.000.
Nieh, Edward C. Y., to Texaco Inc. Alkyl-substituted bicycloalkyl ethers. 4,365,096, Cl. 568-665.000.
Niehaus, Hermann; Droste, Gunter; and Stapel, Wilhelm, to Durkoppwerke GmbH. Controlled thread clamp device for needle threads. 4,364,319, Cl. 112-238.000.
Nielsen, Leif: *See*—
Huelle, Zbigniew R.; Nielsen, Leif; and Jakobsen, Jakob S., 4,364,238, Cl. 62-217.000.
Niemann, Roy A., to Canadian General Electric Company Limited. Method for fabricating isolated phase bus. 4,364,171, Cl. 29-828.000.
Niemond, Larry A.; Helwig, Michael W., Jr.; and Connare, Thomas J., to Titanium Metals Corporation of America. Rail wheel alloy. 4,364,772, Cl. 75-126.00R.
Nihon Sanmo Dyeing Co., Ltd.: *See*—
Tomibe, Shinji; Gomibuchi, Reizo; and Takahashi, Kiyofumi, 4,364,739, Cl. 8-654.000.
Niimi, Yukihide: *See*—
Yoshida, Seietsu; Niimi, Yukihide; Ito, Massao; Sawada, Hiroshi; and Demura, Takayuki, 4,364,227, Cl. 60-276.000.
Nijssen, Wilhelmus P. M.: *See*—
Zwanenburg, Dirk J.; Nijssen, Wilhelmus P. M.; and van der Staak, Caspert G. I., 4,364,986, Cl. 428-156.000.
Nilsson, Peter; and Aslund, Christer, to Granges Nyby AB. Process for the after-treatment of powder-metallurgically produced extruded tubes. 4,364,162, Cl. 419-26.000.
Nilsson, Sven W., to SKF Nova AB. Screw and nut mechanism. 4,364,282, Cl. 74-424.80A.
Nippon Electric Co., Ltd.: *See*—
Nagai, Kiyotake, 4,365,272, Cl. 358-228.000.
Otsuka, Shigeru; and Kai, Tomokazu, 4,365,347, Cl. 455-179.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,364,299, Cl. 84-478.000.
Ogita, Minoru; and Kimura, Shigenobu, 4,365,349, Cl. 455-192.000.
Nippon Kogaku K.K.: *See*—
Maida, Osamu, 4,365,236, Cl. 340-347.0AD.
Mogami, Satoshi, 4,364,641, Cl. 350-426.000.
Nohda, Masao, 4,364,646, Cl. 351-208.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Fukuda, Shuzo; and Ohkubo, Yutaka, 4,364,328, Cl. 118-411.000.
Nippon Paint Co., Ltd.: *See*—
Konishi, Sakuichi; Omori, Yukio; and Kataoka, Hiroyoshi, 4,365,043, Cl. 525-113.000.
Nippon Shokubai Kagaku Kogyo Co. Ltd.: *See*—
Shimizu, Noboru; Yoshida, Hiroshi; Daigo, Hiromiki; Matumoto, Shiyouichi; and Uchino, Hiroyoshi, 4,365,081, Cl. 560-209.000.
Nippon Soken, Inc.: *See*—
Nomura, Etsuji; Sasaya, Hideaki; and Miyazaki, Toshikuni, 4,364,369, Cl. 123-569.000.
Nippon Telegraph and Telephone Public Corp.: *See*—
Ozawa, Masaru; Ooba, Yuji; and Shimizu, Toshio, 4,365,254, Cl. 346-1.100.
Nippon Zoki Pharmaceutical Co., Ltd.: *See*—
Toyomaki, Yoshio, 4,364,947, Cl. 424-256.000.
Nippondenso Co., Ltd.: *See*—
Kawano, Kenzi; Fukaya, Koichi; and Jyoko, Keizou, 4,364,169, Cl. 29-596.000.
Kondo, Toshio; Kobayashi, Akio; Eino, Tomomi; and Tajima, Masahiko, 4,365,299, Cl. 364-431.060.
Tsuzuki, Yoshihiko; Hirabayashi, Yuzi; Shirasaki, Shinji; Matsuyama, Masahiro; and Okazaki, Hiroshi, 4,364,513, Cl. 236-49.000.
Yoshida, Seietsu; Niimi, Yukihide; Ito, Massao; Sawada, Hiroshi; and Demura, Takayuki, 4,364,227, Cl. 60-276.000.
Nishigaki, Yuji: *See*—
Kitajima, Nobuo; Ishihara, Shunichi; Nishigaki, Yuji; and Kitahara, Nobuko, 4,365,015, Cl. 430-62.000.
Nishihara, Masao; Fukui, Yoshinori; Kitamura, Yoshio; Kamikawa, Yoshiyuki; and Azuma, Haruki, to Kobe Steel, Limited. Method and apparatus for cold-working annular workpieces. 4,364,251, Cl. 72-58.000.
Nishikawa, Kazuo; and Hozumi, Kazuo, to Kabushiki Kaisha Morita Seisakusho. Dental radiographic apparatus for photographing entire jaws and taking cephalogram. 4,365,340, Cl. 378-039.000.
Nishioka, Matsuo, to Matsushita Electric Industrial Co., Ltd. Variable resistor device with lock mechanism. 4,365,231, Cl. 338-334.000.
Nishioka, Tatsujiro: *See*—
Hayashi, Yukichi; Tamura, Masauuki; Sugimoto, Osamu; Takizawa, Masayoshi; Nishioka, Tatsujiro; Akagawa, Masaki; and Yokohda, Yutaka, 4,364,404, Cl. 133-4.00A.
Nishizawa, Junichi, to Handotai Kenkyu Shinkokai. Semiconductor image sensor. 4,365,262, Cl. 357-31.000.
Nishizawa, Kazunori: *See*—
Ito, Osamu; and Nishizawa, Kazunori, 4,364,992, Cl. 428-283.000.
Nissan Motor Co., Ltd.: *See*—
Ikeda, Hideo; and Aizawa, Hideo, 4,364,578, Cl. 280-95.00R.
Katayama, Yoshinori; and Tuchiya, Yoshimasa, 4,364,601, Cl. 296-221.000.
Muranaka, Shigeo; and Onoda, Michio, 4,364,259, Cl. 73-35.000.
Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, 4,364,608, Cl. 301-37.0SS.
Shikata, Makoto; and Matsui, Fujio, 4,364,358, Cl. 123-440.000.
Tateyama, Masayuki; and Hosotani, Takashi, 4,364,577, Cl. 280-93.000.
Tsutsumi, Saburo; and Nakagawa, Yasuhiko, 4,364,345, Cl. 123-198.00F.
Nissen Corporation: *See*—
Otte, Gary, 4,364,556, Cl. 272-69.000.
Nitschke, John S. Control system for monitoring and controlling the processing of glass sheets in a glass processing environment. 4,364,766, Cl. 65-160.000.
Nitschke, John S.: *See*—
McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S., 4,364,765, Cl. 65-106.000.
Nitschke, Norman C.: *See*—
McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S., 4,364,765, Cl. 65-106.000.
Nitto Kohki Co.: *See*—
Takeuchi, Hirosato; Degawa, Fumito; and Mikiya, Toshio, 4,364,373, Cl. 126-418.000.
Nizdorf Computer Corporation: *See*—
Stockken, Richard A., 4,365,294, Cl. 364-200.000.
NL Industries, Inc.: *See*—
Rahm, Joseph A.; and Lampe, Ivan B., 4,364,908, Cl. 423-86.000.
Noda, Nobutaka, to Katsuragawa Electric Co., Ltd. Controlling toner concentration of dry developing agent in electrophotography. 4,364,659, Cl. 355-14.00D.
Noguchi, Atomi; Ide, Jushi; Kuwahara, Hiroshi; and Miyazaki, Yoshihiro, to Hitachi, Ltd. Digital differential analyzing processor. 4,365,309, Cl. 364-702.000.
Nohda, Masao, to Nippon Kogaku K.K. Position adjusting device for ophthalmologic instrument. 4,364,646, Cl. 351-208.000.
Nolf, Jean-Marie E., to Raychem Corporation. Heat-recoverable wrap-around closure. 4,364,419, Cl. 138-167.000.
Nomura, Etsuji; Sasaya, Hideaki; and Miyazaki, Toshikuni, to Nippon Soken, Inc. Method and apparatus for recirculating exhaust gases in diesel engine. 4,364,369, Cl. 123-569.000.
Norlin Industries, Inc.: *See*—
Meier, James, 4,364,297, Cl. 84-440.000.
Norling, Barry K.; and Bugg, James L., Jr., to Board of Regents, The University of Texas System. Methods for producing adhesive bonds between substrate and polymer employing an intermediate oxide layer. 4,364,731, Cl. 433-218.000.
North American Construction Utility Corp.: *See*—
Stark, Virgil, 4,364,532, Cl. 244-30.000.
North American Philips Corporation: *See*—
Christensen, David A., 4,365,130, Cl. 200-306.000.
White, Roger P., 4,364,670, Cl. 368-114.000.
Northern Petrochemical Company: *See*—
Foerster, Rolf F., 4,364,852, Cl. 252-429.00B.
Northern Telecom Limited: *See*—
Chaput, Guy J.; and Sich, Edward M., 4,365,168, Cl. 307-115.000.
Salama, Amir, 4,364,801, Cl. 204-15.000.
Sinclair, William J.; Straus, Josef; and Garel-Jones, Philip M., 4,364,639, Cl. 350-331.00R.
Northwestern University: *See*—
Marks, Tobin J.; Cuellar, Edward A.; Miller, Steven S.; and Weitz, Eric, 4,364,870, Cl. 260-429.100.
Norwood, Robert F.; and Harper, Robert S. Crutch containing a retractable metal point. 4,364,405, Cl. 135-70.000.
Novak, Lajos: *See*—
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Jakab, Jozsef; Kistamas, Attila; and Ujvari, Istvan, 4,364,931, Cl. 424-84.000.
NOVATOME: *See*—
Carbonnel, Henri, 4,364,713, Cl. 417-50.000.
Noveske, Walter J.: *See*—
Babb, Larry F.; and Noveske, Walter J., 4,364,139, Cl. 15-104.3SN.
Novicky, Nick N., to Tsuetaki, George F. Oxygen-permeable contact lens compositions, methods and articles of manufacture. 4,365,074, Cl. 556-442.000.

NPS Technologies, Inc.: *See*—
Lefter, Jan D., 4,364,417, Cl. 138-42.000.
NSK-Warner K.K.: *See*—
Yanagihara, Hideo, 4,364,528, Cl. 242-107.700.
Nuffer, Daniel E.: *See*—
Beck, Boyd R.; Stewart, Lamar H.; Tapp, Steven; Anderson, Don L., Jr.; and Nuffer, Daniel E., 4,364,797, Cl. 202-181.000.
Nunan, Craig S.: *See*—
Pavkovich, John M.; and Nunan, Craig S., 4,365,339, Cl. 378-015.000.
Nutrisearch Company: *See*—
Chang, Pei K., 4,364,966, Cl. 426-573.000.
Oakley, Francis R.: *See*—
Longrod, Scott J.; and Oakley, Francis R., 4,364,679, Cl. 400-212.000.
Obara, Toshio: *See*—
Motohashi, Katsuichi; Obara, Toshio; Kaneko, Kazuo; and Yamaguchi, Masahiko, 4,364,999, Cl. 428-411.000.
Obolentseva, Galina V.: *See*—
Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; Shalimov, Alexandr A.; Furmanov, Jury A.; Silchenko, Valery P.; Shalimov, Sergei A.; Khadzhai, Yaroslav I.; Obolentseva, Galina V.; and Vorobiev, Nikolai E., 4,364,393, Cl. 128-335.500.
O'Brien, Dennis E., to UOP Inc. Fluid contacting process. 4,364,821, Cl. 208-325.000.
Obrist, Albert, to Albert Obrist AG. Closure apparatus incorporating a magnetic clutch for screwing-on a plastic screw closure. 4,364,218, Cl. 53-331.500.
Oda, Goro, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for and method of cleaning a photo-sensitive body with cleaning blade brought gradually into contact with body. 4,364,660, Cl. 355-15.000.
Ogan, Robert M., to Telex Computer Products, Inc. Reinkable ribbon cartridge. 4,364,678, Cl. 400-202.200.
Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Webbing guide device. 4,364,583, Cl. 280-802.000.
Ogawa, Yukio: *See*—
Mamiya, Toshiharu; Yamada, Tateo; Hirohata, Michio; Ogawa, Yukio; and Kimura, Hiroyuki, 4,364,649, Cl. 354-25.000.
Ogita, Minoru; and Kimura, Shigenobu, to Nippon Gakki Seizo Kabushiki Kaisha. Radio receiver having phase locked loop and automatic frequency control loop for stably maintaining local oscillator frequency of voltage-controlled local oscillator. 4,365,349, Cl. 455-192.000.
Ohdan, Kyoji: *See*—
Umemura, Sumio; Ohdan, Kyoji; Sakai, Fumihiko; Suzuki, Kenichi; Bando, Yasuo; Hogami, Toshihiko; and Fuginaga, Masataka, 4,364,844, Cl. 252-435.000.
Ohkawa, Koue; Fujii, Shin; and Seino, Takashi, to Mitsui Toatsu Chemicals, Inc. Resin composition for bonding foundry sand. 4,365,047, Cl. 525-447.000.
Ohki, Kenji: *See*—
Tokuyama, Mitsuru; Ohki, Kenji; Sagae, Masayuki; and Tsujii, Kaoru, 4,364,985, Cl. 428-149.000.
Ohkubo, Kiyokazu: *See*—
Iizuka, Yoshitoku; and Ohkubo, Kiyokazu, 4,364,445, Cl. 180-70.00R.
Ohkubo, Yutaka: *See*—
Fukuda, Shuzo; and Ohkubo, Yutaka, 4,364,328, Cl. 118-411.000.
Ohnishi, Masahiro: *See*—
Higuchi, Noboru; Yano, Teruo; and Ohnishi, Masahiro, 4,364,760, Cl. 55-523.000.
Ohniwa, Takehiko: *See*—
Senuma, Michio; Shimada, Fumio; Shigeta, Yoshihiro; Saito, Syuichiro; Aizawa, Hiroshi; Ohniwa, Takehiko; and Canon Denshi Kabushiki Kaisha, 4,364,654, Cl. 354-234.000.
Ohno, Akira; Katayama, Shitomi; Senaha, Susumu; Kyo, Suizo; and Akagami, Akira, to NHK Spring Co., Ltd.; and Yokohama Kiko Co., Ltd. Highly reflective plastic reflector with crystalline inorganic film coating. 4,364,637, Cl. 350-288.000.
Ohno, Mutsuyuki, to Cho-Jirushi Plastics Industry Co., Ltd. Glass stand. 4,364,480, Cl. 211-85.000.
Ohno, Syotaro: *See*—
Fujimoto, Teruo; Nagasawa, Mitsuru; and Ohno, Syotaro, 4,365,023, Cl. 521-32.000.
Ohsawa, Mitsuo; and Nakazawa, Hiroshi, to Sony Corporation. Record player. 4,365,326, Cl. 369-268.000.
Ohta, Masafumi: *See*—
Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Sasaki, Masaomi, 4,365,014, Cl. 430-59.000.
Ohta, Yoshikatsu: *See*—
Kanai, Tamaki; Yamagichi, Takashi; Yoshikawa, Hirofumi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,364,885, Cl. 264-134.000.
Ohtsu, Eiichi; and Shibata, Takanori, to Hitachi, Ltd. Automatic air-conditioning apparatus. 4,364,428, Cl. 165-11.00R.
Ohtsuka, Katsuyuki; Ohuchi, Jin; and Takahashi, Yoshiharu, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Method for producing oxide powder. 4,364,859, Cl. 252-643.000.
Ohuchi, Jin: *See*—
Ohtsuka, Katsuyuki; Ohuchi, Jin; and Takahashi, Yoshiharu, 4,364,859, Cl. 252-643.000.
Oi, Tetsu; Takagi, Kazumasa; and Fukazawa, Tokuumi, to Hitachi, Ltd. Scintillator with $ZnWO_4$ single crystal. 4,365,155, Cl. 378-49.000.
Oja, Viktor; and Wikstrom, Sigvard, to Memoteknik AB. Heat transfer meter. 4,364,676, Cl. 374-44.000.
Okada, Michio: *See*—
Tatsuwaki, Masao; Nemoto, Shin; Katayama, Yutaka; Okada, Michio; and Hotta, Kuzuyuki, 4,365,307, Cl. 364-557.000.
Okamoto, Eisaku: *See*—
Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,364,299, Cl. 84-478.000.
Okamoto, Kouichi; Sakuyama, Masaki; and Kataoka, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Device for draining cooling liquid from rotary electric machine with liquid cooled rotor. 4,364,241, Cl. 62-505.000.
Okamoto, Takashi; and Doi, Osamu, to Unitika Ltd. Resin composition comprising water-soluble polyamide and vinyl alcohol-based polymer. 4,365,041, Cl. 525-58.000.
Okamoto, Takeshi: *See*—
Minagawa, Shoichi; Okamoto, Takeshi; and Sakai, Takamasa, 4,365,216, Cl. 333-153.000.
Okamoto, Yukiro: *See*—
Endo, Takuro; Tomita, Yukio; Okamoto, Yukiro; Imaoka, Hiroshi; and Sakiyama, Michio, 4,364,257, Cl. 72-405.000.
Okawa, Masahisa: *See*—
Shiga, Akinobu; Fukui, Yoshiharu; Sasaki, Toshio; Okawa, Masahisa; Matsu-Ura, Hideaki; and Yamada, Yasuharu, 4,364,851, Cl. 252-429.00B.
Okazaki, Hiroshi: *See*—
Tsuzuki, Yoshihiko; Hirabayashi, Yuzi; Shirasaki, Shinji; Matsuyama, Masahiro; and Okazaki, Hiroshi, 4,364,513, Cl. 236-49.000.
Okinoshima, Hiroshige: *See*—
Sato, Yasuhiko; Inomata, Hiroshi; and Okinoshima, Hiroshige, 4,364,809, Cl. 204-159.130.
Okubo, Akio: *See*—
Kohno, Tadashi; Shimizu, Takahiko; Takahashi, Kenji; Fukui, Hishao; Okubo, Akio; and Masuda, Noriaki, 4,364,684, Cl. 401-264.000.
Okuhara, Shinji, to Hitachi, Ltd. Semiconductor switch. 4,365,170, Cl. 307-252.00A.
Okumura, Hajime: *See*—
Kunimatsu, Yoshio; Okumura, Hajime; Masai, Hiroshi; Yamada, Koki; and Yamada, Mikio, 4,364,960, Cl. 426-17.000.
Okuyama, Takeshi: *See*—
Mayumi, Masakatsu; Okuyama, Takeshi; and Mitooka, Kenji, 4,364,894, Cl. 264-334.000.
Oliff, James R.: *See*—
Holley, John M., Jr.; and Oliff, James R., 4,364,509, Cl. 229-17.00B.
O'Loughlin, James P., to United States of America, Air Force. Coaxial cable design. 4,365,109, Cl. 174-109.000.
Olsen, Donald A.; and Boulanger, Henry J., to Texas Instruments Incorporated. Time delay relay with spring clips. 4,365,225, Cl. 337-88.000.
Olson, Kenneth E.: *See*—
Katz, Daniel S.; and Olson, Kenneth E., 4,364,913, Cl. 423-365.000.
Olson, Lloyd C.: *See*—
Cornelius, Gail; and Olson, Lloyd C., 4,364,524, Cl. 239-720.000.
Olympus Optical Co., Ltd.: *See*—
Hayasaka, Toshimi, 4,364,630, Cl. 350-518.000.
Terada, Katumi, 4,364,653, Cl. 354-203.000.
Omnitech Inc.: *See*—
Laliberte, Albert J.; and Jerominek, Joseph L., 4,364,878, Cl. 264-2.200.
Omori, Yukio: *See*—
Konishi, Sakuichi; Omori, Yukio; and Kataoka, Hiroyoshi, 4,365,043, Cl. 525-113.000.
Onda, Yoshiro; Muto, Hiroaki; and Maruyama, Kazumasa, to Shin-Etsu Chemical Co. Ltd. Enterosoluble capsules. 4,365,060, Cl. 536-65.000.
O'Neal, Russell D.; Leffert, Charles B.; Teichmann, Theodor; and Teitel, Robert J., to Texas Gas Transmission Corporation. Multi-step chemical and radiation process for the production of gas. 4,364,897, Cl. 376-148.000.
O'Neill, John F.: *See*—
Ruether, Peter G.; and O'Neill, John F., 4,365,112, Cl. 179-1.0SC.
Ono, Hiroshi; Fujii, Hidetsugu; and Inoue, Shigeru, to Mitsui Toatsu Chemicals, Inc. Synthesis of urea. 4,365,089, Cl. 564-67.000.
Onoda, Michio: *See*—
Muranaka, Shigeo; and Onoda, Michio, 4,364,259, Cl. 73-35.000.
Onotera, Larry Y.: *See*—
Froese, Abram; Onotera, Larry Y.; and Liebelt, Alvin, 4,365,346, Cl. 455-42.000.
Ooba, Yuji: *See*—
Ozawa, Masaru; Ooba, Yuji; and Shimizu, Toshio, 4,365,254, Cl. 346-1.100.
Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, to Nissan Motor Co., Ltd.; and Hashimoto Forming Kogyo Co., Ltd. Wheel cover for a vehicle. 4,364,608, Cl. 301-37.0SS.
Orbach, Zvi: *See*—
Ruhman, Smil; and Orbach, Zvi, 4,365,304, Cl. 364-515.000.
Oridoroga, Valentin A.: *See*—
Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; Shalimov, Alexandr A.; Furmanov, Jury A.; Silchenko, Valery P.; Shalimov, Sergei A.; Khadzhai, Yaroslav I.; Obolentseva, Galina V.; and Vorobiev, Nikolai E., 4,364,393, Cl. 128-335.500.
Orino, Michio: *See*—
Saito, Shinichi; Aikawa, Kazuo; Orino, Michio; Aoi, Kazuya; and Kusakabe, Hideo, 4,365,057, Cl. 528-503.000.
Oronzio de Nora Impianti Elettrochimici S.p.A.: *See*—
Nidola, Antonio; and Martelli, Gian N., 4,364,803, Cl. 204-30.000.

Ortho Pharmaceutical Corporation: *See*—
Kung, Patrick C.; and Goldstein, Gideon, 4,364,932, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,364,933, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,364,934, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,364,935, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,364,936, Cl. 424-85.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,364,937, Cl. 424-85.000.

Osaka Rasenkan Kogyo Kabushiki Kaisha: *See*—
Koizumi, Chie, 4,364,252, Cl. 72-59.000.

Oshima, Harumi, to Tokico Ltd. Retraction spring for disc brake pads. 4,364,455, Cl. 188-1.110.

Oshima, Masabumi; Honda, Haruo; and Takahashi, Takeshi, to Hitachi, Ltd. Gas circuit breaker. 4,365,126, Cl. 200-144.0AP.

Ostrum, James V.: *See*—
Weller, Kenneth G.; and Ostrum, James V., 4,364,476, Cl. 206-508.000.

Oswald, Alexis A.; and Barnum, Harry W., to Exxon Research and Engineering Co. Overtreated higher dialkyl dimethyl ammonium clay gellants. 4,365,030, Cl. 523-508.000.

Otey, Milton G.: *See*—
Jones, Robert L.; Otey, Milton G.; and Perkins, Roy W., 4,364,906, Cl. 423-19.000.

Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, to Honda Motor Co., Ltd. Control system for internal combustion engines, having function of detecting abnormalities in engine speed signal detecting system. 4,364,359, Cl. 123-440.000.

Otsuka, Shigeru; and Kai, Tomokazu, to Nippon Electric Co., Ltd. Channel selecting system for use in a multi-channel mobile communication system. 4,365,347, Cl. 455-179.000.

Ott, Clyde E. Status record system. 4,364,586, Cl. 283-55.000.

Ott, James D., to Advanced Semiconductor Materials Die Bonding Inc. Object transport apparatus. 4,364,707, Cl. 414-744.00B.

Otte, Gary, to Nissen Corporation. Emergency shut-off switch and frame assemblies for exercise apparatus. 4,364,556, Cl. 272-69.000.

Owen, George, Jr.: *See*—
White, John M.; and Owen, George, Jr., 4,364,562, Cl. 273-26.00A.

Owens-Corning Fiberglas Corporation: *See*—
Shannon, Richard F., 4,364,883, Cl. 264-60.000.
Sullivan, Timothy A.; and Whitfield, James, Jr., 4,364,762, Cl. 65-2.000.

Owens-Illinois, Inc.: *See*—
Farkas, Daniel S.; and Zabor, Eric R., 4,364,764, Cl. 65-29.000.
Kontz, Robert F., 4,364,896, Cl. 264-513.000.
Pirooz, Perry P., 4,365,021, Cl. 501-15.000.

Oy Wartsila AB: *See*—
Paro, Daniel, 4,364,307, Cl. 92-157.000.

Ozawa, Masaru; Ooba, Yuji; and Shimizu, Toshio, to Nippon Telegraph and Telephone Public Corp. Two-color recording paper and method and recording apparatus utilizing the two-color recording paper. 4,365,254, Cl. 346-1.100.

P.V. Trim Limited: *See*—
Moran, Eric, 4,364,789, Cl. 156-214.000.

Paap, Hans J.: *See*—
Arnold, Dan M.; and Paap, Hans J., 4,365,154, Cl. 250-270.000.

Pabst, Manfred: *See*—
Van Wersch, Kurt; and Pabst, Manfred, 4,364,784, Cl. 156-78.000.

Pader, Morton, to Lever Brothers Company. Shampoo compositions comprising saccharides. 4,364,837, Cl. 252-173.000.

Pagano, Victor H.; and Hennessey, John M., to United States of America, Army. Composite cored combat vehicle armor. 4,364,300, Cl. 89-36.00A.

Pai, Yang-Kuang. Rotary parking structure for passenger cars. 4,364,703, Cl. 414-250.000.

Paladino, Anthony, to Timberland Equipment Limited. Apparatus for planting seedlings. 4,364,316, Cl. 111-3.000.

PAMCO Industries Corp.: *See*—
Zompolas, Thomas, 4,364,268, Cl. 73-178.00R.

Pangle, Randy L. Body squeegee. 4,364,142, Cl. 15-117.000.

Pap nee Imrenyi, Gabriella: *See*—
Szejtli, Jozsef; Budai, Zsuzsanna; Pap nee Imrenyi, Gabriella; and Kerekes, Andras, 4,365,061, Cl. 536-103.000.

Papp, Gyula: *See*—
Takacs, Kalman; Kiss nee Ajzert, Ilona; Simay, Antal; Literati Nagy, Peter; Hetyey nee Papp, Maria; Ecsery nee Puskas, Marian; Szekeres, Laszlo; Papp, Gyula; Viragh, Sandor; and Udvardy, Eva, 4,365,064, Cl. 546-148.000.

Pardue, Robert M.: *See*—
Arnold, Jones B.; Burleson, Robert R.; and Pardue, Robert M., 4,365,301, Cl. 364-475.000.

Parker, Russell A. Photographic darkroom control system with timing means. 4,364,655, Cl. 354-299.000.

Parkison, Richard G.; and Hofstetter, Edward G., Jr., to American Standard Inc. Flow control technique. 4,364,523, Cl. 239-533.140.

Paro, Daniel, to Oy Wartsila AB. Lubrication system. 4,364,307, Cl. 92-157.000.

Partridge, Alan H., to Duracell International Inc. Situ metal plating of the cathode terminal surface of an electrochemical cell. 4,364,800, Cl. 204-15.000.

Pasternack, Adalbert: *See*—
Warncke, Ernst; and Pasternack, Adalbert, 4,364,384, Cl. 128-204.280.

Pasternack, Henry J.; and Keffer, Garry C., to ASI Systems, Inc. Automatic var controller. 4,365,190, Cl. 323-211.000.

Patberg, John K.: *See*—
MacDonald, John B.; Patberg, John K.; and Raamot, Jaan, 4,365,305, Cl. 364-521.000.

Pate, Harold T.: *See*—
Wozniak, Glenn A.; Rady, Robert R.; and Pate, Harold T., 4,364,292, Cl. 83-605.000.

Patel Navin D.: *See*—
Nakhle, George D.; Bell, Cecil R.; Edwards, Arthur R.; Lathery, Willie M.; and Patel Navin D., 4,364,320, Cl. 112-262.200.

Patel, Pinakin S.: *See*—
Maru, Hansraj C.; and Patel, Pinakin S., 4,365,007, Cl. 429-19.000.

Pattison, Ian C., to Warner-Lambert Company. Diphenylpropanamines, compositions thereof and use thereof. 4,364,954, Cl. 424-267.000.

Patzschke, Hans-Peter; and Gobel, Armin, to Herberts Gesellschaft mit beschrankter Haftung. Cathodically depositable aqueous electro-dipping lacquer coating composition. 4,364,860, Cl. 525-127.000.

Pavkovich, John M.; and Nunan, Craig S., to General Electric Company. Tomographic apparatus and method for reconstructing planar slices from non-absorbed and non-scattered radiation. 4,365,339, Cl. 378-015.000.

Pawloski, Chester E.; and Ginter, Sally P., to Dow Chemical Company, The. (Halo)(hydroxy)-substituted phosphites and phosphorates as flame retardants in polyurethane foams. 4,365,026, Cl. 521-168.000.

Payton, Jay O.: *See*—
Payton, Kenneth J.; and Payton, Jay O., 4,364,411, Cl. 137-513.500.

Payton, Kenneth J.; and Payton, Jay O. Liquid line thermal barrier. 4,364,411, Cl. 137-513.500.

PCUK - Produits Chimiques Ugine Kuhlmann: *See*—
DeLavarenne, Serge Y.; and Tellier, Pierre, 4,365,100, Cl. 568-733.000.

Peabody Process Systems, Inc.: *See*—
Willett, Howard P.; and Bakke, Even, 4,364,910, Cl. 423-242.000.

Pearl, David R., to Gerber Garment Technology, Inc. Cutting apparatus with consumable marker. 4,364,330, Cl. 118-697.000.

Pearson, Robert J.; and Buergin, Rodney G., to National Gypsum Company. Fire-resistant metal stud. 4,364,212, Cl. 52-281.000.

Pedersen, S. Erik: *See*—
Teng, Harry H. I.; and Pedersen, S. Erik, 4,364,856, Cl. 252-437.000.

Peek, Daniel C.: *See*—
Byrd, Norman R.; and Peek, Daniel C., 4,364,991, Cl. 428-265.000.

Peiseler, Franz F. Apparatus for machining a number of workpieces with one tool. 4,364,204, Cl. 51-52.00R.

Peisert, Joseph C.: *See*—
Fleming, Peter B.; Licht, Richard R.; and Peisert, Joseph C., 4,364,210, Cl. 52-221.000.

Pellman, Marguerite, executrix: *See*—
Cork, Dale J.; and Pellman, Russell, deceased, 4,364,975, Cl. 427-294.000.

Pellman, Russell, deceased: *See*—
Cork, Dale J.; and Pellman, Russell, deceased, 4,364,975, Cl. 427-294.000.

Pennwalt Corporation: *See*—
McKellin, Wilbur H.; Mageli, Orville L.; and D'Angelo, Antonio J., 4,365,086, Cl. 562-512.000.
Radice, Peter F., 4,365,283, Cl. 361-233.000.

Pentel Kabushiki Kaisha: *See*—
Kohno, Tadashi; Shimizu, Takahiko; Takahashi, Kenji; Fukui, Hishao; Okubo, Akio; and Masuda, Noriaki, 4,364,684, Cl. 401-264.000.

Perfection Manufacturing Company, The: *See*—
Serati, Ronald A., 4,364,557, Cl. 272-73.000.

Perkin-Elmer Corporation, The: *See*—
Bersin, Richard L.; and Clouser, William H., 4,364,413, Cl. 137-624.200.
Hannah, Robert W.; Coates, John P.; Savitzky, Abraham; Ford, Michael A.; and Carter, Harry V., 4,365,303, Cl. 364-498.000.

Perkins, Roy W.: *See*—
Jones, Robert L.; Otey, Milton G.; and Perkins, Roy W., 4,364,906, Cl. 423-19.000.

Perlstein, Jerome H.: *See*—
Detty, Michael R.; Murray, Bruce J.; and Perlstein, Jerome H., 4,365,016, Cl. 430-83.000.
Detty, Michael R.; Murray, Bruce J.; and Perlstein, Jerome H., 4,365,017, Cl. 430-83.000.

Perotto, Jean-Felix; and Piguet, Christian, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Interface device for the entry of data into an instrument of small volume responsive to body movement. 4,365,243, Cl. 340-712.000.

Perrot, Jacques: *See*—
Thominet, Michel; and Perrot, Jacques, 4,364,867, Cl. 548-567.000.

Persson, Nils C., to Inventor Invest AB. Container for decomposable material such as excrement. 4,364,130, Cl. 4-449.000.

Pesata, Patrick J., Jr.; Frerking, Harlan W., Jr.; and Bletso, Nelson C., to Goodyear Tire & Rubber Company, The. Process to control the curing reaction between a copolyester resin and an epoxide compound, and a composition formed for that process. 4,365,046, Cl. 525-438.000.

Peters, Clifford M., to W-K-M Wellhead Systems, Inc. Pull type relay valve with automatic lockout. 4,364,412, Cl. 137-557.000.

Peters, Kenneth D.: *See*—
DeGraff, Richard R.; and Peters, Kenneth D., 4,364,820, Cl. 208-101.000.

Peterson, Elmer R.: *See*—
Bass, C. Joe; and Peterson, Elmer R., 4,364,432, Cl. 166-290.000.

Peterson, Marvin L.: *See*—
House, Horace F.; Peterson, Marvin L.; and Hein, Norman W., Jr., 4,365,306, Cl. 364-551.000.

Peterson, Robert D.: *See*—
Harkins, Thomas G.; and Peterson, Robert D., 4,364,616, Cl. 312-223.000.

Petersson, Lars H.: *See*—
Brandt, Lennart H.; Hultmark, Ingvar O.; Petersson, Lars H.; and Soderbaum, Carl U., 4,364,711, Cl. 416-142.000.

Petrimaux, Eric: *See*—
Bouteille, Daniel; Marguet, Hugues; and Petrimaux, Eric, 4,364,414, Cl. 137-624.140.

Pett, Robert A.: *See*—
Theodore, Ares N.; and Pett, Robert A., 4,364,783, Cl. 156-69.000.

Peyronel, Jean-Francois: *See*—
Farge, Daniel; Moutonnier, Claude; Le Roy, Pierre; and Peyronel, Jean-Francois, 4,365,062, Cl. 544-22.000.

Pfizer Inc.: *See*—
Barth, Wayne E., 4,364,957, Cl. 424-271.000.
Bindra, Jasjit S.; Eggler, James F.; Johnson, Michael R.; and Schaaf, Thomas K., 4,365,077, Cl. 560-53.000.

Philberth, Bernhard; and Philberth, Karl, to Sawatsky, Wilfried Ernst. Core lamination for shell-type cores, particularly for transformers. 4,365,224, Cl. 336-212.000.

Philberth, Karl: *See*—
Philberth, Bernhard; and Philberth, Karl, 4,365,224, Cl. 336-212.000.

Philion, Richard E.: *See*—
Lesher, George Y.; and Philion, Richard E., 4,365,065, Cl. 546-334.000.

Philip, Alexander S.: *See*—
Chopping, Geoffrey; Moberly, Robert V.; and Philip, Alexander S., 4,365,330, Cl. 370-100.000.

Philip Morris Incorporated: *See*—
Keritsis, Gus D., 4,364,401, Cl. 131-297.000.

Phillips Petroleum Company: *See*—
McDaniel, Max P.; and Johnson, Marvin M., 4,364,839, Cl. 252-430.000.
McDaniel, Max P.; and Johnson, Marvin M., 4,364,840, Cl. 252-430.000.
McDaniel, Max P.; and Johnson, Marvin M., 4,364,841, Cl. 252-430.000.
McDaniel, Max P.; and Johnson, Marvin M., 4,364,842, Cl. 252-430.000.
McDaniel, Max P.; and Johnson, Marvin M., 4,364,854, Cl. 252-437.000.
McDaniel, Max P.; and Johnson, Marvin M., 4,364,855, Cl. 252-437.000.

Phillips, Robert N.: *See*—
Kemp, James M.; and Phillips, Robert N., 4,364,450, Cl. 180-336.000.

Phipps, Arthur L., to U.C. Industries. Foam extrusion die assembly. 4,364,722, Cl. 425-192.00R.

Piazza, Gary L. Stringed simulator. 4,364,298, Cl. 84-465.000.

Picazo, Jose J., Jr.: *See*—
Biba, Kenneth J.; and Picazo, Jose J., Jr., 4,365,331, Cl. 370-124.000.

Picker International, Inc.: *See*—
Vepy, Tamas A., 4,365,342, Cl. 378-173.000.

Pierce, Ralph E., III, to Truck Repair Service, Inc. Side view mirror pivoting assembly for a vehicle. 4,364,638, Cl. 350-289.000.

Pierce, William S.; Wisman, Craig B.; and Donachy, James H., to Research Corporation. Trileaflet type prosthetic heart valve. 4,364,127, Cl. 3-1.500.

Piguet, Christian: *See*—
Perotto, Jean-Felix; and Piguet, Christian, 4,365,243, Cl. 340-712.000.

Pike, Roderick D. Devices to control boats and other objects on moving ships. 4,364,326, Cl. 114-369.000.

Pinson, George T.: *See*—
Daniel, James A.; and Pinson, George T., 4,364,272, Cl. 73-432.00R.

Pioneer Electronic Corporation: *See*—
Soma, Hiroshi; Iyobe, Makoto; Iijima, Takekazu; and Moriyama, Yutaka, 4,365,113, Cl. 179-1.00E.
Soma, Hiroshi, 4,365,114, Cl. 179-1.0VE.
Tabata, Toshio, 4,365,249, Cl. 340-825.300.
Takizawa, Yoshiyuki; Kashiwazaki, Takashi; Shimoda, Koji; and Kuriyama, Kazumi, 4,365,278, Cl. 360-73.000.
Tsuda, Youichiro, 4,365,267, Cl. 358-84.000.

Pipich, Charles W.: *See*—
Nathenson, Richard D.; Pipich, Charles W.; and Kopnitsky, Joseph R., deceased, 4,365,176, Cl. 310-54.000.

Pira, Franco; and Ponte, Giovanni, to Cselt - Centro Studi e Laboratori Telecomunicazioni S.P.A. Digital ringing-signal generator. 4,365,116, Cl. 179-84.00T.

Pirani, Giancarlo, to Cselt, Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of and means for spread-spectrum transmission. 4,365,327, Cl. 370-18.000.

Pirooz, Perry P., to Owens-Illinois, Inc. Low temperature sealant glass. 4,365,021, Cl. 501-15.000.

Pissiotas, Georg; Rohr, Otto; and Kristinsson, Haukur, to Ciba-Geigy Corporation. 1,3,4-Thiadiazolyloxyphenylureas. 4,364,769, Cl. 71-90.000.

Pitney Bowes Inc.: *See*—
Dannatt, Hugh S. L., 4,365,139, Cl. 219-216.000.
Holtz, Earl B., 4,365,293, Cl. 364-200.000.

Pittsburg & Midway Coal Mining Co., The: *See*—
Anderson, Raymond P.; Schmalzer, David K.; and Wright, Charles H., 4,364,817, Cl. 208-8.0LE.
Schmid, Bruce K.; and Junkin, James E., 4,364,818, Cl. 208-10.000.

Piukovich, Sandor: *See*—
Gádo, Istvan; Jekkel nee Bokany, Antonia; Szvoboda, Gyorgy; Jarai, Miklos; Piukovich, Sandor; and Istvan, Sandor, 4,365,020, Cl. 435-80.000.

Plamper, Gerhard R.; Fortlage, Paul R.; and Kaesgen, Hans-Hartmut, to MTD Products Inc. Combined torque converter and clutch. 4,364,735, Cl. 474-14.000.

Plastex (Bradford) Limited: *See*—
Rushworth, Norman, 4,364,154, Cl. 19-129.00R.

Plastics Engineering Company: *See*—
Lee, Chung J., 4,365,036, Cl. 524-299.000.

Platou, John S.: *See*—
Fisher, Edmund A.; and Platou, John S., 4,364,433, Cl. 166-339.000.

Platt, James B., III. Precision trimming and precision cross-cutting apparatus and method for bulk material. 4,364,311, Cl. 100-6.000.

Plessey Company plc, The: *See*—
Chopping, Geoffrey; Moberly, Robert V.; and Philip, Alexander S., 4,365,330, Cl. 370-100.000.

Pluta, Richard: *See*—
Morgan, Cleon; Pluta, Richard; and Thomas, John F., Jr., 4,364,214, Cl. 52-311.000.

Podkhvatilin, Evgeny R.: *See*—
Gorbatov, Vasily M.; Spirin, Evgeny T.; Shakhov, Vladimir V.; Vagin, Viktor V.; Khromov, Vyacheslav I.; Bogushev, Zimel A.; Eremin, Viktor I.; Vainzof, Kaletta M.; and Podkhvatilin, Evgeny R., 4,364,309, Cl. 99-352.000.

Poirier, Jean-Pierre: *See*—
Labeyrie, Etienne; Poirier, Jean-Pierre; and Arnaud, Francoise, 4,364,946, Cl. 424-249.000.

Polaroid Corporation: *See*—
Bartels-Keith, James R.; and Karger, Eva R., 4,365,085, Cl. 560-251.000.
Mehta, Avinash C., 4,365,072, Cl. 549-415.000.

Politechnika Gdanska: *See*—
Falkowski, Leonard S.; Stefanska, Barbara J.; Troka, Elzbieta; Golik, Jerzy J.; and Borowski, Edward, 4,365,058, Cl. 536-6.500.

Polon, Juhani, to Neles Oy. Method for attenuating a medium flow passing through a valve and a valve for applying the method. 4,364,415, Cl. 137-625.320.

Pompei, Arturu; Raymond, John M.; and Sherotsky, George D., to Boeing Company, The. Sidewall panel window assembly and method of installing. 4,364,533, Cl. 244-129.300.

Pomponi, Roberto: *See*—
Bollero, Adriano; Carpinello, Bruno; Galliano, Giuseppe; and Pomponi, Roberto, 4,365,193, Cl. 324-102.000.

Ponte, Giovanni: *See*—
Pira, Franco; and Ponte, Giovanni, 4,365,116, Cl. 179-84.00T.

Pontiac Furniture, Inc.: *See*—
Johnson, Carl B., 4,364,603, Cl. 297-84.000.

Pope, William S.: *See*—
Thomas, David L.; Pope, William S.; and Huckabay, William B., 4,364,446, Cl. 181-120.000.

Portage Machine Company: *See*—
Schiler, Frederick S.; and Young, Gary D., 4,364,179, Cl. 33-174.00L.

Porter, Glendon R.: *See*—
Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,365,119, Cl. 179-170.200.

Possati, Mario; Golinelli, Guido; and Selleri, Narciso, to Finike Italiana Marposs S.p.A. Comparator for verifying linear dimensions of mechanical parts. 4,364,177, Cl. 33-147.00K.

Pounds, Walter R., to KB Denver, Inc. Illuminated keyboard. 4,365,120, Cl. 200-5.00A.

PPG Industries, Inc.: *See*—
Darlington, William B.; and Dubois, Donald W., 4,364,815, Cl. 204-283.000.
Madigan, Darold L., 4,365,055, Cl. 528-371.000.
White, Preston S., 4,364,813, Cl. 204-252.000.

Prater, Cordell E., to Texas Instruments Incorporated. High current static MOS driver circuit with low DC power dissipation. 4,365,172, Cl. 307-270.000.

Price, Edison A., to Edison Price Incorporated. Electrical connector. 4,364,626, Cl. 339-184.00M.

Prinz, Dieter: *See*—
Willhelm, Jorg; Jacoby, Hans-Dieter; Schuster, Erich; and Prinz, Dieter, 4,364,180, Cl. 33-174.00L.

Procon International Inc.: *See*—
Proctor, Russell C., 4,364,915, Cl. 423-437.000.

Procter & Gamble Company, The: *See*—
Louis, Paul R.; Sorensen, Eugene R.; and Ballard, Thomas R., 4,364,723, Cl. 425-384.000.

Proctor, Russell C., to Procon International Inc. Process for recovery of carbon dioxide from flue gas. 4,364,915, Cl. 423-437.000.

Prof. Dipl.-KFM. Franz Poiner: *See*—
Tuchenhagen, Jurgen; Roiner, Franz; and Grosserhode, Josef, 4,364,962, Cl. 426-41.000.

Progressive Machine Company, Inc.: *See*—
Bruno, Gerald R., 4,364,527, Cl. 242-75.510.

Prokofievna, Skripchik L.; Moiseevich, Shutov G.; Emmanuilovna, Erdman M.; Eduardovich, Pukhalsky M.; Ivanovich, Lezhen V.; Ignatievich, Shevchenko A.; and Vladimirovich, Vrubievsky E. Method of preparing modified wood. 4,364,976, Cl. 427-382.000.

Prussin, Samuel B., to AE Development Corporation. Non-pressurized dispensing system and composition. 4,364,515, Cl. 239-8.000.
Pullen, Joel F. Vertical microscope slide. 4,364,632, Cl. 350-536.000.
Pulvari, Charles F. Efficient method and apparatus for converting solar energy to electrical energy. 4,365,106, Cl. 136-206.000.
Purdue Frederick Company, The: *See—*
Sasmor, Ernest J.; and Rothwell, Kenneth G., 4,364,929, Cl. 424-80.000.
Pyatt, Lawrence A.; and Thompson, Robert W. Identification of pipe material in wells. 4,365,197, Cl. 324-221.000.
Pyle, Donald L. Dual tractor road grader with double arched center frame. 4,364,438, Cl. 172-789.000.
R. M. Wade & Co.: *See—*
Cornelius, Gail; and Olson, Lloyd C., 4,364,524, Cl. 239-720.000.
Raamot, Jaan: *See—*
MacDonald, John B.; Patberg, John K.; and Raamot, Jaan, 4,365,305, Cl. 364-521.000.
Racal Automation Limited: *See—*
Smith, Anthony J.; and Sheppard, Timothy J., 4,365,334, Cl. 371-27.000.
Raden, Daniel S.: *See—*
Arbir, Francis W.; Raden, Daniel S.; and Narducy, Kenneth W., 4,364,850, Cl. 252-426.000.
Radice, Peter F., to Pennwalt Corporation. Corona discharge poling process. 4,365,283, Cl. 361-233.000.
Raduchel, Bernd: *See—*
Skuballa, Werner; Vorbruggen, Helmut; Raduchel, Bernd; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,364,950, Cl. 424-263.000.
Skuballa, Werner; Vorbrueggen, Helmut; Loge, Olaf; Vischer, Peter; and Raduchel, Bernd, 4,364,951, Cl. 424-263.000.
Rady, Robert R.: *See—*
Wozniak, Glenn A.; Rady, Robert R.; and Pate, Harold T., 4,364,292, Cl. 83-605.000.
Radzins, Edmund, to Curt G. Joa, Inc. Apparatus for applying elastic ribbon segments to diapers. 4,364,787, Cl. 156-164.000.
Ragen Precision Industries, Inc.: *See—*
Barto, Robert M., Jr.; Lopata, Ira; and Emden, Bernard V., 4,364,529, Cl. 242-195.000.
Rahm, Joseph A.; and Lampe, Ivan B., to NL Industries, Inc. Method for purifying titanyl hydrate. 4,364,908, Cl. 423-86.000.
Rail-Or-Trail Corp.: *See—*
Beatty, William T., 4,364,315, Cl. 105-215.00C.
Rainville Company, Inc.: *See—*
Rainville, Dewey, 4,364,721, Cl. 425-149.000.
Rainville, Dewey, to Rainville Company, Inc. Apparatus for blowing oriented containers. 4,364,721, Cl. 425-149.000.
Ramacher, Barry, to Ramacher Manufacturing Company. Nut harvesting machine. 4,364,222, Cl. 56-328.00R.
Ramacher Manufacturing Company: *See—*
Ramacher, Barry, 4,364,222, Cl. 56-328.00R.
Raman, Ramaswamy V.: *See—*
Witt, August F.; and Raman, Ramaswamy V., 4,365,005, Cl. 428-611.000.
Rankin, William J.; and Whitaker, Jerome P., to Holaday Industries, Inc. Isotopic broad-band survey meter. 4,365,192, Cl. 324-72.000.
Ranz, Erwin: *See—*
Hocker, Jurgen; and Ranz, Erwin, 4,365,012, Cl. 430-19.000.
Rapp, Heinz: *See—*
Biedermann, Ernst; and Rapp, Heinz, 4,364,147, Cl. 15-404.000.
Raquet, Erwin, to Fried. Krupp Huttenwerke AG. Railway wheel vibration damping device. 4,364,594, Cl. 295-7.000.
Ratliffe, Joseph M., to United States of America, Navy. Ball bearing assembly device. 4,364,170, Cl. 29-724.000.
Rauschen, Rudolf; and Schellen, Ludwig, to Trutzschler GmbH & Co. KG. Web dividing device. 4,364,152, Cl. 19-105.000.
Rausing, Hans A., to Tetra Pak International AB. Container intended for contents under pressure together with a method for the manufacture of such a container. 4,364,220, Cl. 53-411.000.
Rayburn, Donald H.: *See—*
Schlumberger, Stephanie F.; and Rayburn, Donald H., 4,364,575, Cl. 280-19.000.
Raychem Corporation: *See—*
Nolf, Jean-Marie E., 4,364,419, Cl. 138-167.000.
Raymond, John M.: *See—*
Pompei, Arturu; Raymond, John M.; and Sherotsky, George D., 4,364,533, Cl. 244-129.300.
Raynes, Stephen H.; and Miller, David H., to Arthur Guinness Son and Company (Park Royal) Limited. Beverage dispensing system. 4,364,493, Cl. 222-399.000.
Razumney, Gerardo A., to Rexnord, Incorporated. Electrochemical gas detection system. 4,364,810, Cl. 204-195.00R.
RCA Corporation: *See—*
Gentile, Carmine; and Kucharewski, Nicholas, 4,365,212, Cl. 331-111.000.
Harford, Jack R., 4,365,208, Cl. 330-278.000.
Kucharewski, Nicholas, 4,365,174, Cl. 307-594.000.
Lagoni, William A., 4,365,266, Cl. 358-37.000.
Landry, Norman R., 4,365,215, Cl. 333-127.000.
Michaelis, Theodore D., 4,365,324, Cl. 369-44.000.
Rutishauser, Ernst A. O., 4,365,270, Cl. 358-140.000.
Sinniger, Joseph O., 4,365,202, Cl. 328-58.000.
Redding, Robert J. Apparatus for locating interfaces in media. 4,364,273, Cl. 73-614.000.
Redmond, Russell J.; and Hannula, Donald L., to American Heyer-Schulte Corporation. Low profile shunt system. 4,364,395, Cl. 604-10.000.
Reed, Michael A., to Koolatron Industries, Ltd. Control circuitry for thermoelectric environmental chamber. 4,364,234, Cl. 62-3.000.
Reeh, Ulrike; and Denk, Hans, to Siemens Aktiengesellschaft. Method for the preparation of transparent casting resins. 4,365,052, Cl. 528-92.000.
Re Fiorentin, Stefano, to Centro Ricerche Fiat S.p.A. Feeler device for measuring surface roughness. 4,364,264, Cl. 73-105.000.
Regie Nationale des Usines Renault: *See—*
Debret, Alain; and Soetaert, Guy, 4,364,149, Cl. 16-87.00R.
Gautier, Guy; and Bondiguet, Regis, 4,364,573, Cl. 277-153.000.
Rehfeldt, Karl H., to U.S. Philips Corporation. Differential amplifier. 4,365,206, Cl. 330-260.000.
Rehlen, Helmut; and Roellinghoff, Jurgen. Process for surface treatment of foamed sheets. 4,364,892, Cl. 264-284.000.
Reich, Fritz; and Thalmann, Alfred, to Georg Fischer Aktiengesellschaft. Apparatus for welding a joint between plastic pipes. 4,365,144, Cl. 219-535.000.
Reichman, Benjamin: *See—*
Bard, Allen J.; Fan, Fu-Ren F.; and Reichman, Benjamin, 4,365,010, Cl. 429-111.000.
Reid, Michael: *See—*
Brown, David J.; and Reid, Michael, 4,364,422, Cl. 141-1.100.
Reider, Samuel B., to General Motors Corporation. High intensity air blast fuel nozzle. 4,364,522, Cl. 239-399.000.
Reierson, Robert L.: *See—*
Bremmer, Bart J.; and Reierson, Robert L., 4,365,073, Cl. 549-451.000.
Reiner, Eric: *See—*
Lang, John; and Hunter, R. Scott, 4,364,490, Cl. 220-407.000.
Reiner, Ralph E. Mixing and transport conveyor. 4,364,667, Cl. 366-325.000.
Reinhart, Theodore J., Jr.: *See—*
Grimes, Mark F.; and Reinhart, Theodore J., Jr., 4,365,034, Cl. 524-256.000.
Reisman, Arnold: *See—*
Crowder, Billy L.; and Reisman, Arnold, 4,364,166, Cl. 29-571.000.
Reizer, Robert F.; Koivu, Albert H.; and Cohen, Leslie J., to McDonnell Douglas Corporation. Coating and adhesive composition comprising (a) PVC, (b) acrylate polymer having carboxyl cure sites and (c) reinforcing filler. 4,365,029, Cl. 523-437.000.
Reliance Electric Company: *See—*
Baker, Richard H., 4,365,281, Cl. 361-91.000.
Relovsky, Jakob: *See—*
Kuus, Olaf; and Relovsky, Jakob, 4,364,498, Cl. 224-42.45R.
Remington, Richard C., to Kidde, Inc. (Presto Lock Company Division). Handle for luggage and the like. 4,364,150, Cl. 16-126.000.
Renner, Gerhard: *See—*
Unsold, Eberhard; Renner, Gerhard; and Wechsung, Reiner, 4,365,157, Cl. 250-282.000.
Rennerfelt, Gustav B. Method of making mirror blanks including blanks made according to said method. 4,364,763, Cl. 65-22.000.
Republic Steel Corporation: *See—*
Toth, James M., 4,365,198, Cl. 324-226.000.
Research Corporation: *See—*
Pierce, William S.; Wisman, Craig B.; and Donachy, James H., 4,364,127, Cl. 3-1.500.
Reuter, Wolfgang: *See—*
Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, 4,364,944, Cl. 424-246.000.
Rexham Corporation: *See—*
Moyle, LaMont E., 4,364,989, Cl. 428-216.000.
Rexnord, Incorporated: *See—*
Razumney, Gerardo A., 4,364,810, Cl. 204-195.00R.
Reynolds, Blake: *See—*
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,364,744, Cl. 48-86.00R.
Rhoades, Edward J.; Rosenberger, Edwin C.; and Waker, Jerome A., to Chem-Lawn Corporation. Injector. 4,364,516, Cl. 239-74.000.
Rhoades, James J.: *See—*
Chubb, Arthur B.; and Rhoades, James J., 4,364,254, Cl. 72-319.000.
Rhodes, John M.: *See—*
Kalnin, Ilmar L.; Breckenridge, George J., Jr.; DiEdwardo, Andrew H.; and Rhodes, John M., 4,364,916, Cl. 423-447.600.
Rhodes, William A. Heliostat-adjusting solar sight. 4,364,183, Cl. 33-268.000.
Rhone-Poulenc Agrochimie: *See—*
Gough, Stanley T. D., 4,364,767, Cl. 71-86.000.
Rhone-Poulenc Industries: *See—*
Farge, Daniel; Moutonnier, Claude; Le Roy, Pierre; and Peyronel, Jean-Francois, 4,365,062, Cl. 544-22.000.
Ricardo, George L. Throttle control. 4,364,283, Cl. 74-489.000.
Ricci, Albert A., to Bristol-Myers Company. Shelf organizer. 4,364,481, Cl. 211-184.000.
Rice, David B.: *See—*
Grady, John K.; Rice, David B.; and Rice, Paul G., 4,365,343, Cl. 378-181.000.
Rice, Paul G.: *See—*
Grady, John K.; Rice, David B.; and Rice, Paul G., 4,365,343, Cl. 378-181.000.

Rice, Rex, to Fairchild Camera and Instrument Corp. Method and circuitry for correcting errors in recirculating memories. 4,365,332, Cl. 371-13.000.
Rich, John W., Jr. Autogenous heavy medium process and apparatus for separating coal from refuse. 4,364,822, Cl. 209-3.000.
Richter, George N.: *See*—
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,364,744, Cl. 48-86.00R.
Ricker, Dennis J.: *See*—
Licata, Joseph P.; and Ricker, Dennis J., 4,365,180, Cl. 310-216.000.
Ricoh Co., Ltd.: *See*—
Horike, Masanori; Jinnai, Koichiro; Iwasaki, Kyuhachiro; and Kodama, Yutaka, 4,365,255, Cl. 346-75.000.
Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Sasaki, Masaomi, 4,365,014, Cl. 430-59.000.
Yamauchi, Satoshi, 4,365,209, Cl. 330-308.000.
Yanagawa, Nobuyuki, 4,364,656, Cl. 355-3.0CH.
Rieman, Willis E.: *See*—
Barry, Leon G.; and Rieman, Willis E., 4,365,226, Cl. 337-198.000.
Rigazio, Corrado, to Fiat-Allis Macchine Movimento Terra, S.p.A. Seat support structure for the driving of an earth moving machine. 4,364,602, Cl. 297-334.000.
Rinderle, Heinz: *See*—
Gillessen, Klaus; Rinderle, Heinz; Schairer, Werner; Siegle, Martin; and Malinowski, Christoph, 4,365,244, Cl. 340-782.000.
Ringel, Wolfgang: *See*—
de Riz, Erich; and Ringel, Wolfgang, 4,364,125, Cl. 2-255.000.
Ripley, Ian S.: *See*—
McBride, Alistair D.; and Ripley, Ian S., 4,364,776, Cl. 134-10.000.
Ripley-Lotee, Michael J.; Dillinger, Robert B.; and Clark, Keith E., to United States of America, Navy. Propulsion/control modular booster. 4,364,530, Cl. 244-3.220.
Rite-Hite Corporation: *See*—
Hahn, Norbert, 4,364,137, Cl. 14-71.300.
Rizzo, Joseph F.: *See*—
Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,365,119, Cl. 179-170.200.
Robbins, John C.: *See*—
Seigel, Harold O.; and Robbins, John C., 4,365,153, Cl. 250-253.000.
Robe, John K.; and Keranen, Robert M., to Carr-Griff, a part interest. Electric power converter for recreational vehicle. 4,365,288, Cl. 363-141.000.
Robert Bosch GmbH: *See*—
Eckert, Konrad, 4,364,361, Cl. 123-453.000.
Eheim, Franz; and Hofer, Gerald, 4,364,360, Cl. 123-450.000.
Heitmann, Jurgen, 4,365,308, Cl. 364-577.000.
Wissmann, Michael; and Stiefel, Peter, 4,364,362, Cl. 123-454.000.
Roberts Filter Manufacturing Company: *See*—
Roberts, Robert L., 4,364,830, Cl. 210-268.000.
Roberts, Robert L., to Roberts Filter Manufacturing Company. Filter bottom. 4,364,830, Cl. 210-268.000.
Robertshaw Controls Company: *See*—
Rowley, Paul M., 4,365,228, Cl. 337-347.000.
Robinair Manufacturing Corporation: *See*—
Lower, Ralph C.; and Shirley, Roger D., 4,364,236, Cl. 62-77.000.
Robinson, Charles E. Pressure sensitive machine safety switch. 4,365,124, Cl. 200-81.500.
Robinson, Lawrence D. Aquarium bath. 4,364,132, Cl. 4-546.000.
Rockwell International Corporation: *See*—
Hallford, Ben R., 4,365,350, Cl. 455-330.000.
Roe, Joseph T.: *See*—
Fitch, Richard A.; and Roe, Joseph T., 4,364,752, Cl. 55-138.000.
Roellinghoff, Jurgen: *See*—
Rehlen, Helmut; and Roellinghoff, Jurgen, 4,364,892, Cl. 264-284.000.
Roethlein, Richard J.: *See*—
DeCasperis, Anthony J.; Roethlein, Richard J.; and Breault, Richard D., 4,365,008, Cl. 429-36.000.
Rogachev, Evgeny P.: *See*—
Tarasov, Nikolai M.; Varukha, Nikolai A.; Brontman, Rostislav L.; Slesarev, Boris A.; Zhukov, Anatoly M.; Mizik, Valery V.; Rogachev, Evgeny P.; and Gurnov, Nikolai I., 4,365,137, Cl. 219-137.310.
Rogers Corporation: *See*—
Traut, G. Robert, 4,364,884, Cl. 264-118.000.
Rogers, Douglas K., to Diamond Shamrock Corporation. Gas electrode operation. 4,364,805, Cl. 204-98.000.
Rogers, Douglas K., to Diamond Shamrock Corporation. Gas electrode shutdown procedure. 4,364,806, Cl. 204-98.000.
Rogers, Lloyd W., Jr.; and Winnale, James A., to General Motors Corporation. Junction ring for continuous-loop passive seat belt system. 4,364,584, Cl. 280-802.000.
Rohlje, Wilfried: *See*—
Korte, Rolf D.; and Rohlje, Wilfried, 4,364,486, Cl. 215-296.000.
Rohr, Otto: *See*—
Pissiotas, Georg; Rohr, Otto; and Kristinsson, Haukur, 4,364,769, Cl. 71-90.000.
Roiner, Franz: *See*—
Tuchenhagen, Jurgen; Roiner, Franz; and Grosserhode, Josef, 4,364,962, Cl. 426-41.000.
Romblom, Edward R.; and Sundeen, Arthur R., to General Motors Corporation. Diesel engine fuel limiting system. 4,364,351, Cl. 123-357.000.
Root, Morris J.: *See*—
Leep, Gus W.; and Root, Morris J., 4,365,028, Cl. 523-402.000.
Rosen, Jonathan J.; Acosta, George M.; and Bowman, Christopher J., to Vascor, Inc. Heart valve with removable cusp protector band. 4,364,126, Cl. 3-1.500.
Rosenberger, Edwin C.: *See*—
Rhoades, Edward J.; Rosenberger, Edwin C.; and Waker, Jerome A., 4,364,516, Cl. 239-74.000.
Ross, William J.: *See*—
Clark, Barry P.; Ross, William J.; and Todd, Alec, 4,364,956, Cl. 424-269.000.
Rothwell, Kenneth G.: *See*—
Sasmor, Ernest J.; and Rothwell, Kenneth G., 4,364,929, Cl. 424-80.000.
Rotor Tool Company, The: *See*—
Ciolli, Donald A., 4,364,286, Cl. 74-768.000.
Rotron Incorporated: *See*—
McDaniel, Wharton; Brown, Fred A.; and Thompson, Donald, 4,365,187, Cl. 318-254.000.
Roussel Uclaf: *See*—
Autissier, Denise; and Barthelemy, Pierre, 4,364,939, Cl. 424-180.000.
Martel, Jacques; Tessier, Jean; Girault, Pierre; and Grandadam, Jean A., 4,364,928, Cl. 424-79.000.
Rouxel, Jean J.: *See*—
Laloz, Jean P.; Mimoun, Hubert; Rouxel, Jean J.; and Saussine, Lucien, 4,365,082, Cl. 560-243.000.
Rowe, John C.: *See*—
Kennerly, John M.; Lindner, Gordon M.; and Rowe, John C., 4,364,269, Cl. 73-223.000.
Rowley, Paul M., to Robertshaw Controls Company. Thermostat construction having a one piece plunger with a wing-like section and method of making the same. 4,365,228, Cl. 337-347.000.
Rubio, Rafael: *See*—
Berne, Robert M.; Belardinelli, Luiz; and Rubio, Rafael, 4,364,922, Cl. 424-9.000.
Rudolph, Siegfried, to Schreiber-Klaranlagen Dr. Ing. Aug. Schreiber GmbH & Co. KG. Bottom suspension arrangement for a liquid screw conveyor assembly. 4,364,469, Cl. 198-616.000.
Ruether, Peter G.; and O'Neill, John F., to Storage Technology Corporation. Speech detector circuit for a TASI system. 4,365,112, Cl. 179-1.0SC.
Rufkahr, Ben R.: *See*—
Rufkahr, Bernard O., 4,364,310, Cl. 99-357.000.
Rufkahr, Bernard O., to Rufkahr, Ben R. Mobile barbecue apparatus. 4,364,310, Cl. 99-357.000.
Ruhman, Smil; and Orbach, Zvi, to Yeda Research & Development Co., Ltd. Method and apparatus for on-line data enhancement. 4,365,304, Cl. 364-515.000.
Ruhr Zink GmbH: *See*—
von Ropenack, Adolf; Stock, Gunter; and Heubner, Ulrich, 4,364,807, Cl. 204-114.000.
Rundell, Herbert A., to Texaco Inc. Sensitive heavy duty dynamic torque measurement coupling unit and meter. 4,364,277, Cl. 73-862.340.
Rushworth, Norman, to Plastex (Bradford) Limited. Faller bars. 4,364,154, Cl. 19-129.00R.
Ruston, Donald A.: *See*—
Campbell, James R.; and Anspach, Roy L., 4,365,004, Cl. 428-593.000.
Rutherford, David B., Jr.: *See*—
Sibley, Henry C.; and Rutherford, David B., Jr., 4,365,298, Cl. 364-426.000.
Rutishauser Data AG: *See*—
Rutishauser, Thomas, 4,364,551, Cl. 271-121.000.
Rutishauser, Ernst A. O., to RCA Corporation. Dual standard vertical deflection system. 4,365,270, Cl. 358-140.000.
Rutishauser, Thomas, to Rutishauser Data AG. Transportation device for sheet-like recording carriers. 4,364,551, Cl. 271-121.000.
Ryan, Philip M.: *See*—
Davis, Donald E.; Moore, Richard D.; Ryan, Philip M.; and Weber, Edward V., 4,365,163, Cl. 250-491.100.
Ryder, Francis E., to Ryder International Corporation. Molding machine and system for accomodating a plurality of such machines. 4,364,720, Cl. 425-144.000.
Ryder International Corporation: *See*—
Ryder, Francis E., 4,364,720, Cl. 425-144.000.
Sabotka, Jeffery A.: *See*—
Duwell, Ronald A.; and Sabotka, Jeffery A., 4,364,569, Cl. 273-245.000.
Sack, Berthold: *See*—
Forster, Siegfried; Kleemann, Manfred; and Sack, Berthold, 4,364,726, Cl. 431-215.000.
Sack, Wieland; Anthonsen, Reiner; and Kertesz, Ferenc, to Felix Schoeller, Jr. GmbH & Co. Waterproof photographic paper and method of producing same. 4,364,971, Cl. 427-44.000.
Sadamatsu, Shigeru: *See*—
Takenouchi, Mutsuo; and Sadamatsu, Shigeru, 4,365,274, Cl. 358-293.000.
Sagae, Masayuki: *See*—
Tokuyama, Mitsuru; Ohki, Kenji; Sagae, Masayuki; and Tsujii, Kaoru, 4,364,985, Cl. 428-149.000.
Sage, Larry: *See*—
Askwith, Herbert; and Sage, Larry, 4,364,261, Cl. 73-40.000.
Saggese, Vincent A. Slotted concrete pipe. 4,364,891, Cl. 264-263.000.
Saidi, Ali M.; and Hesselink, Frans T., to National Iranian Oil Company; and Shell Internationale Research Maatschappij B.V. Method

for recovering oil from an underground formation. 4,364,431, Cl. 166-275.000.

Saint Gobain Industries: *See*—
Delcoigne, Adrien; and Lanneau, Jacques, 4,364,790, Cl. 156-346.000.

Saito, Shinichi; Aikawa, Kazuo; Orino, Michio; Aoi, Kazuya; and Kusakabe, Hideo, to Sumitomo Chemical Company, Limited. Method for drying polyolefins. 4,365,057, Cl. 528-503.000.

Saito, Syuichiro: *See*—
Senuma, Michio; Shimada, Fumio; Shigeta, Yoshihiro; Saito, Syuichiro; Aizawa, Hiroshi; Ohniwa, Takehiko; and Canon Denshi Kabushiki Kaisha, 4,364,654, Cl. 354-234.000.

Saito, Tetsuo, to Tokico Ltd. Vehicle height adjusting apparatus. 4,364,574, Cl. 280-6.00R.

Saitoh, Kazuo: *See*—
Tabata, Hideyo; Kuwahara, Yoshitaka; Machida, Michihide; Kume, Shyoichi; Iga, Takeo; Saitoh, Kazuo; and Tomura, Shinji, 4,365,022, Cl. 501-97.000.

Sakabe, Kazuyuki: *See*—
Kimura, Kaoru; and Sakabe, Kazuyuki, 4,364,876, Cl. 260-465.400.

Sakabe, Toshiaki: *See*—
Yamamoto, Yasunobu; Sakabe, Toshiaki; and Hamada, Eizi, 4,364,997, Cl. 428-372.000.

Sakaguchi, Takumi: *See*—
Takahashi, Noriyuki; Sakaguchi, Takumi; and Tajima, Yasutomo, 4,364,582, Cl. 280-698.000.

Sakai, Fumihiko: *See*—
Umemura, Sumio; Ohdan, Kyoji; Sakai, Fumihiko; Suzuki, Kenichi; Bando, Yasuo; Hogami, Toshihiko; and Fuginaga, Masataka, 4,364,844, Cl. 252-435.000.

Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Sasaki, Masaomi, to Ricoh Company, Limited. Electrophotographic photoconductor. 4,365,014, Cl. 430-59.000.

Sakai, Kunitaka: *See*—
Nakamura, Yukinobu; Nakajima, Tsuneo; Atsumi, Toru; and Sakai, Kunitaka, 4,364,429, Cl. 165-28.000.

Sakai, Takamasa: *See*—
Minagawa, Shoichi; Okamoto, Takeshi; and Sakai, Takamasa, 4,365,216, Cl. 333-153.000.

Sakai, Teruo: *See*—
Itoh, Kiyoshi; Kamoshita, Tetuo; Sakai, Teruo; and Kawasaki, Harumi, 4,364,535, Cl. 248-123.100.

Sakiyama, Michio: *See*—
Endo, Takuro; Tomita, Yukio; Okamoto, Yukiro; Imaoka, Hiroshi; and Sakiyama, Michio, 4,364,257, Cl. 72-405.000.

Sakuma, Shinzo; and Warabi, Junichi, to Kabushiki Kaishi Meidensha; and Kabushiki Kaisha GemVac. Vacuum power interrupter. 4,365,127, Cl. 200-144.00B.

Sakurada, Nobuaki: *See*—
Kawamura, Masaharu; Sakurada, Nobuaki; Shinoda, Nobuhiko; Ito, Tadashi; Ito, Fumio; and Murakami, Hiroyashu, 4,364,647, Cl. 354-23.00D.

Sakuyama, Masaki: *See*—
Okamoto, Kouichi; Sakuyama, Masaki; and Kataoka, Kenji, 4,364,241, Cl. 62-505.000.

Salama, Amir, to Northern Telecom Limited. Method of an apparatus for selectively surface-treating preselected areas on a body. 4,364,801, Cl. 204-15.000.

Sam, Doris L. Combination sun shade and article carry-all. 4,364,123, Cl. 2-209.100.

Samford, Travis L. Safety joint. 4,364,587, Cl. 285-3.000.

Sando Iron Works Co., Ltd.: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,364,248, Cl. 68-5.00E.

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Method and apparatus for wet-heat treating a knitted fabric. 4,364,248, Cl. 68-5.00E.

Sankoorikal, Varghese L.; and Holmes, Keith D., Jr., to Burroughs Wellcome Co. High pressure liquid chromatographic system. 4,364,263, Cl. 73-61.10C.

Sankyo Company Limited: *See*—
Terada, Atsusuke; Tanaka, Shigeru; and Misaka, Eiichi, 4,365,076, Cl. 560-51.000.

Sano, Mitsuharu: *See*—
Yamanaka, Tsutomu; Sano, Mitsuharu; and Yasuda, Hiroshi, 4,365,066, Cl. 548-228.000.

Santilli, Donald S., to Chevron Research Company. Fibrous clay mixtures. 4,364,857, Cl. 252-455.00R.

Sanyo Electric Co., Ltd.: *See*—
Fujimoto, Isao, 4,365,348, Cl. 455-180.000.
Tsujita, Kaoru; Tobioka, Sigeki; and Monden, Ikuo, 4,365,265, Cl. 358-29.000.

Sanzey, Emile: *See*—
Chapelle, Jules A.; Levacher, Jean-Pierre; Sanzey, Emile; and Vironneau, Pierre, 4,364,239, Cl. 62-235.100.

Sardo, Alberto, to Xeda International S.A. Automatic machine for sorting out round, oval or flat fruit in accordance with their diameter. 4,364,479, Cl. 209-668.000.

Sarumaru, Kohei: *See*—
Kadowaki, Koju; Sarumaru, Kohei; and Shibano, Takeshi, 4,365,087, Cl. 562-534.000.

Sasaki, Ken: *See*—
Matsuyama, Shigeru; and Sasaki, Ken, 4,364,168, Cl. 29-592.00R.

Sasaki, Masaomi: *See*—
Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Sasaki, Masaomi, 4,365,014, Cl. 430-59.000.

Sasaki, Toshio: *See*—
Shiga, Akinobu; Fukui, Yoshiharu; Sasaki, Toshio; Okawa, Masahisa; Matsu-Ura, Hideaki; and Yamada, Yasuharu, 4,364,851, Cl. 252-429.00B.

Sasaya, Hideaki: *See*—
Nomura, Etsuji; Sasaya, Hideaki; and Miyazaki, Toshikuni, 4,364,369, Cl. 123-569.000.

Sasmor, Ernest J.; and Rothwell, Kenneth G., to Purdue Frederick Company, The. Germicidal colloidal lubricating gels and method of producing the same. 4,364,929, Cl. 424-80.000.

Sassi, Carlo; and Vicini, Antonio, to Industrie Pirelli S.p.A. Individual gauge for the microclimate index. 4,364,398, Cl. 128-736.000.

Sato, Isao: *See*—
Soya, Masahiro; Sato, Isao; and Kurose, Seiji, 4,364,543, Cl. 251-221.000.

Sato, Yasuhiko; Inomata, Hiroshi; and Okinoshima, Hiroshige, to Shin-Etsu Chemical Co., Ltd. Method for preparing cured rubbery products of organopoly-siloxanes. 4,364,809, Cl. 204-159.130.

Sato, Yo, to Kabushiki Kaisha Sato. Bar code printing device. 4,364,312, Cl. 101-110.000.

Sato, Yoshito; and Matsumoto, Minoru, to Kabushiki Kaisha Komatsu Seisakusho. Suspension apparatus for track-type vehicles. 4,364,443, Cl. 180-9.500.

Saussine, Lucien: *See*—
Laloz, Jean P.; Mimoun, Hubert; Rouxel, Jean J.; and Saussine, Lucien, 4,365,082, Cl. 560-243.000.

Sauvanet, Maurice, to Thomson-CSF. Process and device for phasing a local clock. 4,365,329, Cl. 370-100.000.

Savin Corporation: *See*—
Landa, Benzion, 4,364,460, Cl. 192-35.000.
Landa, Benzion, 4,364,657, Cl. 355-3.0SH.
Landa, Benzion, 4,364,661, Cl. 355-3.0SH.

Savino, Dominick J. Variable closure surgical stapling apparatus with retractable anvil. 4,364,507, Cl. 227-83.000.

Savitzky, Abraham: *See*—
Hannah, Robert W.; Coates, John P.; Savitzky, Abraham; Ford, Michael A.; and Carter, Harry V., 4,365,303, Cl. 364-498.000.

Sawada, Hiroshi: *See*—
Yoshida, Seietsu; Niimi, Yukihide; Ito, Massao; Sawada, Hiroshi; and Demura, Takayuki, 4,364,227, Cl. 60-276.000.

Sawatsky, Wilfried Ernst: *See*—
Philberth, Bernhard; and Philberth, Karl, 4,365,224, Cl. 336-212.000.

Scarpino, David A.: *See*—
Scarpino, Joseph J., III; and Scarpino, David A., 4,365,240, Cl. 340-571.000.

Scarpino, Joseph J., III; and Scarpino, David A. Attitude change alarm. 4,365,240, Cl. 340-571.000.

Schaaf, Thomas K.: *See*—
Bindra, Jasjit S.; Eggler, James F.; Johnson, Michael R.; and Schaaf, Thomas K., 4,365,077, Cl. 560-53.000.

Schadt, Martin: *See*—
Boller, Arthur; Germann, Alfred; Schadt, Martin; and Villiger, Alois, 4,364,838, Cl. 252-299.610.

Schaefer, Carl F.: *See*—
Berg, Morris; Schaefer, Carl F.; and Johnston, William J., 4,364,761, Cl. 55-523.000.

Schairer, Werner: *See*—
Gillessen, Klaus; Rinderle, Heinz; Schairer, Werner; Siegle, Martin; and Malinowski, Christoph, 4,365,244, Cl. 340-782.000.

Schellen, Ludwig: *See*—
Rauschen, Rudolf; and Schellen, Ludwig, 4,364,152, Cl. 19-105.000.

Schering Aktiengesellschaft: *See*—
Skuballa, Werner; Vorbruggen, Helmut; Raduchel, Bernd; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,364,950, Cl. 424-263.000.
Skuballa, Werner; Vorbrueggen, Helmut; Loge, Olaf; Vischer, Peter; and Raduchel, Bernd, 4,364,951, Cl. 424-263.000.
Speck, Ulrich; Blaszkiewicz, Peter; Seidelmann, Dieter; and Klieger, Erich, 4,364,921, Cl. 424-5.000.

Schering Corporation: *See*—
Knapp, Julius Z., 4,364,485, Cl. 215-232.000.
Leibowitz, Paul; and Weinstein, Marvin J., 4,364,863, Cl. 260-112.00R.

Schiler, Frederick S.; and Young, Gary D., to Portage Machine Company. Statically balanced inspection probe assembly. 4,364,179, Cl. 33-174.00L.

Schilling, Walter W., to MacMillan Bloedel Limited. Rotating disc splitter. 4,364,423, Cl. 144-366.000.

Schillinger, Ekkehard: *See*—
Skuballa, Werner; Vorbruggen, Helmut; Raduchel, Bernd; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,364,950, Cl. 424-263.000.

Schippers, Heinz; Branscheid, Werner; Lenk, Erich; and Hardt, Udo, to Barmag Barmer Maschinenfabrik AG. Exhaust gas turbocharger. 4,364,717, Cl. 417-407.000.

Schjeldahl, Gilmore T., to Cathedyne Corporation. Surgical pumping operation. 4,364,716, Cl. 417-394.000.

Schlemmer, Roy G.: *See*—
Crawford, George H.; Downing, Edward J.; and Schlemmer, Roy G., 4,364,995, Cl. 428-336.000.

Schlumberger, Stephanie F.; and Rayburn, Donald H. Ski lift for children. 4,364,575, Cl. 280-19.000.

Schmalzer, David K.: *See*—
Anderson, Raymond P.; Schmalzer, David K.; and Wright, Charles H., 4,364,817, Cl. 208-8.0LE.

Schmid, Bruce K.; and Junkin, James E., to Pittsburg & Midway Coal Mining Co., The. Control of pyrite addition in coal liquefaction process. 4,364,818, Cl. 208-10.000.

Schmid, Karl: *See*—
Grunert, Margarete; Schmid, Karl; and Tesmann, Holger, 4,364,777, Cl. 134-29.000.

Schmidt, Hans, to Componentes Electronicos, S.A. Methods for mounting connection wires on a solid electrolyte capacitor. 4,364,163, Cl. 29-570.000.

Schneider, Abraham; Khelghatian, Habet M.; Hague, Louise D.; and Jezl, James L., to Standard Oil Company (Indiana). Crystalline olefin block polymers. 4,365,045, Cl. 525-247.000.

Schneider, Fritz, to Impex-Essen, Vertrieb von Werkzeugen GmbH. Fastener driving tool with cartridge ejector. 4,364,506, Cl. 227-10.000.

Schneider, Gerhard; Ludwig, Rolf; and Fischer, Jochen, to Kochs Adler AG. Machine for sewing together workpiece parts having edges of equal or unequal length by means of a bead seam. 4,364,317, Cl. 112-132.000.

Schneider, Gerhard; Ludwig, Rolf; and Fischer, Jochen, to Kochs Adler AG. Machine for sewing together workpiece parts having edges of equal or unequal length by means of a bead seam. 4,364,318, Cl. 112-147.000.

Schneider, Haiko: *See*—
Gut, Karl; Voegeli, Marcel; and Schneider, Haiko, 4,364,879, Cl. 264-22.000.

Schockman, Robert L., to Minster Machine Company, The. Double feed roll lift mechanism. 4,364,505, Cl. 226-154.000.

Schoeller & Co., Elektronik GmbH: *See*—
Gliem, Ralf; and Brandt, Reinhard, 4,364,792, Cl. 156-628.000.

Scholly, Christian: *See*—
Bloodworth, Lonnie B., Jr.; Scholly, Christian; and Williford, Thomas L., Jr., 4,364,788, Cl. 156-179.000.

Schonger, John S. Water saving flush system. 4,364,129, Cl. 4-324.000.

School of Bioengineering and Biophysics of the University of Dundee, The: *See*—
Shapcott, Nigel G., 4,364,580, Cl. 280-266.000.

Schreiber-Klaranlagen Dr. Ing. Aug. Schreiber GmbH & Co. KG: *See*—
Rudolph, Siegfried, 4,364,469, Cl. 198-616.000.

Schroder, Dieter K., to Westinghouse Electric Corp. Radiant energy sensor with reduced optical reflection and blooming. 4,365,259, Cl. 357-30.000.

Schroder, Dieter K.: *See*—
Bluzer, Nathan; Jensen, Arthur S.; Schroder, Dieter K.; and Malmberg, Paul R., 4,364,164, Cl. 29-571.000.

Schubert, Wolfgang: *See*—
Beneke, Wolfgang; Teichmann, Paul; and Schubert, Wolfgang, 4,364,151, Cl. 19-0.200.

Schulz, Siegfried; Stroppel, Karl-Gunter; and Meckel, Bernd, to Volkswagenwerk AG. Temperature-dependent output control for a heat pump absorber. 4,364,240, Cl. 62-476.000.

Schumacher, Ernest W.: *See*—
Clarke, John P.; and Schumacher, Ernest W., 4,364,756, Cl. 55-316.000.

Schuster, Erich: *See*—
Willhelm, Jorg; Jacoby, Hans-Dieter; Schuster, Erich; and Prinz, Dieter, 4,364,180, Cl. 33-174.00L.

Schutz, Hans U.: *See*—
Beffa, Fabio; Back, Gerhard; and Schutz, Hans U., 4,364,864, Cl. 260-145.00B.

Schwan, Herbert A.: *See*—
Jenkins, Jon A.; and Schwan, Herbert A., 4,364,386, Cl. 128-214.00E.

Schweitzer, Francis E., to Du Pont de Nemours, E. I., and Company. Alkylated isoadipoguanamine-formaldehyde crosslinking resin and improved coating compositions produced therefrom. 4,365,053, Cl. 528-258.000.

Science Union et Cie: *See*—
Labeyrie, Etienne; Poirier, Jean-Pierre; and Arnaud, Francoise, 4,364,946, Cl. 424-249.000.

Scintrex Limited: *See*—
Seigel, Harold O.; and Robbins, John C., 4,365,153, Cl. 250-253.000.

SCM Corporation: *See*—
Longrod, Scott J.; and Oakley, Francis R., 4,364,679, Cl. 400-212.000.
Longrod, Scott J.; and DuRoss, Robert M., 4,364,682, Cl. 400-477.000.

Scott, Richard I. H.; and Underhill, Michael J., to U.S. Philips Corporation. Frequency synthesizer. 4,365,201, Cl. 328-14.000.

Scott, William A., to Don Fell Limited; Gordon Fell Limited; and Lawrence Fell Limited. Portable structure and method of erecting same. 4,364,205, Cl. 52-4.000.

Scrudato, James J.: *See*—
Dewolf, Lowell E.; Scrudato, James J.; and Wallace, Robert S., 4,365,246, Cl. 340-802.000.

Seaholm, Reuel A.; and Smith, Stephen W., to Montgomery Elevator Company. Modular sheet metal door structure. 4,364,203, Cl. 49-409.000.

Seaquist Valve Company, division of Pittway Corporation: *See*—
Kinsley, John P., 4,364,484, Cl. 215-220.000.

SECO Industries, Inc.: *See*—
Moss, Theron C.; Mullan, Richard; Boring, Earl; Hjellum, Jerry; and Christison, Alexander, 4,364,144, Cl. 15-229.0AC.

Sehring, Richard; and Buck, Wolfgang, to Celamerck GmbH & Co. KG. Process for the preparation of certain diphenyl ethers. 4,364,875, Cl. 260-465.00E.

Seibold, Herbert: *See*—
Horter, Hans-Dieter; Maier, Wolfgang; and Seibold, Herbert, 4,364,278, Cl. 73-862.360.

Seidel, Thomas E.: *See*—
Leamy, Harry J.; and Seidel, Thomas E., 4,364,778, Cl. 148-1.500.

Seidelmann, Dieter: *See*—
Speck, Ulrich; Blaszkiewicz, Peter; Seidelmann, Dieter; and Klieger, Erich, 4,364,921, Cl. 424-5.000.

Seigel, Harold O.; and Robbins, John C., to Scintrex Limited. Detection of certain minerals of zinc, tungsten, fluorine, molybdenum, mercury and other metals using photoluminescence. 4,365,153, Cl. 250-253.000.

Seiichi Ishizaka, President of Agency of Industrial Science and Technology: *See*—
Ishii, Yoshiaki; Ando, Naoyoshi; Kume, Tsutomu; and Fujinami, Shosaku, 4,364,796, Cl. 201-4.000.

Seiko Koki Kabushiki Kaisha: *See*—
Kitai, Kiyoshi; and Takazawa, Yuzuru, 4,364,648, Cl. 354-25.000.

Seim, Howard N.: *See*—
Hawkins, Raymond C.; Seim, Howard N.; and Haub, Donald J., 4,365,189, Cl. 318-284.000.

Seino, Takashi: *See*—
Ohkawa, Koue; Fujii, Shin; and Seino, Takashi, 4,365,047, Cl. 525-447.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Mayumi, Masakatsu; Okuyama, Takeshi; and Mitooka, Kenji, 4,364,894, Cl. 264-334.000.

Selleri, Narciso: *See*—
Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,364,177, Cl. 33-147.00K.

Senaha, Susumu: *See*—
Ohno, Akira; Katayama, Shitomi; Senaha, Susumu; Kyo, Suizo; and Akagami, Akira, 4,364,637, Cl. 350-288.000.

Senuma, Michio; Shimada, Fumio; Shigeta, Yoshihiro; Saito, Syuichiro; Aizawa, Hiroshi; Ohniwa, Takehiko; and Canon Denshi Kabushiki Kaisha, to Canon Kabushiki Kaisha. Electromagnetic release shutter. 4,364,654, Cl. 354-234.000.

Senyek, Michael L.; and Costanza, Albert J., to Goodyear Tire & Rubber Company, The. Removal of acrylonitrile from latex with oximes. 4,365,027, Cl. 523-332.000.

Serati, Ronald A., to Perfection Manufacturing Company, The. Work control apparatus in an exerciser. 4,364,557, Cl. 272-73.000.

Seres, Jeno; Varkonyi nee Schlavicsko, Erika; Virag, Sandor; and Kulcsar, Gabor, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. 1-Substituted-3-cycloalkyl-sulfonyl-pyrrolidine-2,5-dione derivatives and fungicidal compositions thereof. 4,364,958, Cl. 424-274.000.

Serina, Antoine. Safety installation for elevators. 4,364,453, Cl. 187-29.00R.

Seto, Susumu; Tokuhara, Mitsuhiro; Takemura, Yukio; Yamada, Yu; and Kuwayama, Takeshi, to Canon Kabushiki Kaisha. Scanning illuminator. 4,364,658, Cl. 355-8.000.

Seuss nee Falter, Fride, executrix: *See*—
Seuss, Willy, deceased; and Seuss nee Falter, Fride, executrix, 4,364,378, Cl. 128-24.500.

Seuss, Willy, deceased; and by Seuss nee Falter, Fride, executrix. Massage apparatus with electrostatic field. 4,364,378, Cl. 128-24.500.

Seymour of Sycamore, Inc.: *See*—
Leep, Gus W.; and Root, Morris J., 4,365,028, Cl. 523-402.000.

SGL Industries, Inc.: *See*—
Hammill, S. Scott, 4,364,623, Cl. 339-126.0RS.

Shacket, Sheldon R. Method of operating ferrous toy. 4,364,196, Cl. 46-242.000.

Shackle, Dale R.: *See*—
Crutchfield, E. Bryant; Wright, Richard F.; Adair, Paul C.; Harris, Seth O.; Shackle, Dale R.; and Williams, Dennis L., 4,365,018, Cl. 430-139.000.

Shafer, Philip E.: *See*—
Barnes, George H., Lundstrom, Stephen F.; and Shafer, Philip E., 4,365,292, Cl. 364-200.000.

Shaffer, Jacob E., Jr.: *See*—
Cooper, Kenneth W.; and Shaffer, Jacob E., Jr., 4,364,237, Cl. 62-160.000.

Shakhov, Vladimir V.: *See*—
Gorbatov, Vasily M.; Spirin, Evgeny T.; Shakhov, Vladimir V.; Vagin, Viktor V.; Khromov, Vyacheslav I.; Bogushev, Zimel A.; Eremin, Viktor I.; Vainzof, Kaletta M.; and Podkhvatilin, Evgeny R., 4,364,309, Cl. 99-352.000.

Shakib, Iraj D.; and Yosmali, Krikor, to International Business Machines Corporation. Paper feed roller assembly for a typewriter or printer. 4,364,683, Cl. 400-637.000.

Shalimov, Alexandr A.: *See*—
Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; Shalimov, Alexandr A.; Furmanov, Jury A.; Silchenko, Valery P.; Shalimov, Sergei A.; Khadzhai, Yaroslav I.; Obolentseva, Galina V.; and Vorobiev, Nikolai E., 4,364,393, Cl. 128-335.500.

Shalimov, Sergei A.: *See*—
Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; Shalimov, Alexandr A.; Furmanov, Jury A.; Silchenko, Valery P.; Shalimov, Sergei A.; Khadzhai, Yaroslav I.; Obolentseva, Galina V.; and Vorobiev, Nikolai E., 4,364,393, Cl. 128-335.500.

Shamrock Industries, Inc.: *See*—
Weller, Kenneth G.; and Ostrum, James V., 4,364,476, Cl. 206-508.000.
Shannon, Richard F., to Owens-Corning Fiberglas Corporation. Ceramic products and method of drying same. 4,364,883, Cl. 264-60.000.
Shapcott, Nigel G., to School of Bioengineering and Biophysics of the University of Dundee, The. Wheelchair. 4,364,580, Cl. 280-266.000.
Sharp, Joseph F.; Sutter, Ormond S.; and Cornwell, Philip W., to Lok Products Company. Locking device for grid system. 4,364,686, Cl. 403-347.000.
Sharp Kabushiki Kaisha: *See*—
Yamauchi, Yutaka, 4,365,107, Cl. 136-258.000.
Yasuda, Shuhei; Ishii, Yutaka; and Wada, Tomio, 4,365,242, Cl. 340-709.000.
Sharpe, Donald E., to Automation Industries, Inc. Ultrasonic inspection with back echo monitoring. 4,364,274, Cl. 73-615.000.
Shaw, Robert F. Surgical instrument having self-regulating dielectric heating of its cutting edge and method of using the same. 4,364,390, Cl. 128-303.100.
Sheinbaum, Itzhak. Flowing geothermal wells and heat recovery systems. 4,364,232, Cl. 60-641.200.
Shell Internationale Research Maatschappij B.V.: *See*—
Saidi, Ali M.; and Hesselink, Frans T., 4,364,431, Cl. 166-275.000.
Shelley, Lawrence E., to Goodyear Tire & Rubber Company, The. Process for charging dry terephthalic acid into a reactor. 4,365,078, Cl. 560-94.000.
Sheppard, Timothy J.: *See*—
Smith, Anthony J.; and Sheppard, Timothy J., 4,365,334, Cl. 371-27.000.
Sher, Jay H.; and Cranin, A. Norman. Surgical clamp and drill-guiding instrument. 4,364,381, Cl. 128-92.00E.
Sherotsky, George D.: *See*—
Pompei, Arturu; Raymond, John M.; and Sherotsky, George D., 4,364,533, Cl. 244-129.300.
Shibano, Takeshi: *See*—
Kadowaki, Koju; Sarumaru, Kohei; and Shibano, Takeshi, 4,365,087, Cl. 562-534.000.
Shibata, Takanori: *See*—
Ohtsu, Eiichi; and Shibata, Takanori, 4,364,428, Cl. 165-11.00R.
Shiber, Samuel, to Timetz, Ltd. Automotive energy managing transmission. 4,364,229, Cl. 60-414.000.
Shibuya, Yoshimichi; Takahashi, Masami; and Ishibashi, Tadashi, to Hitachi, Ltd. Method for driving liquid crystal display elements. 4,364,672, Cl. 368-240.000.
Shields, Michael P. Ski pole. 4,364,585, Cl. 280-814.000.
Shiga, Akinobu; Fukui, Yoshiharu; Sasaki, Toshio; Okawa, Masahisa; Matsu-Ura, Hideaki; and Yamada, Yasuharu, to Sumitomo Chemical Company, Limited. Process for producing olefin polymers. 4,364,851, Cl. 252-429.00B.
Shigeta, Yoshihiro: *See*—
Senuma, Michio; Shimada, Fumio; Shigeta, Yoshihiro; Saito, Syuichiro; Aizawa, Hiroshi; Ohniwa, Takehiko; and Canon Denshi Kabushiki Kaisha, 4,364,654, Cl. 354-234.000.
Shikata, Makoto; and Matsui, Fujio, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Air-fuel ratio control system. 4,364,358, Cl. 123-440.000.
Shillady, Robert W., to American Electronic Laboratories, Inc. Semiconductor mounting and matching assembly. 4,365,214, Cl. 333-33.000.
Shimada, Fumio: *See*—
Senuma, Michio; Shimada, Fumio; Shigeta, Yoshihiro; Saito, Syuichiro; Aizawa, Hiroshi; Ohniwa, Takehiko; and Canon Denshi Kabushiki Kaisha, 4,364,654, Cl. 354-234.000.
Shimazoe, Michitaka; Matsuoka, Yoshitaka; Akahane, Ryozo; Shimizu, Yasushi; Nemoto, Hideyuki; and Tanabe, Masanori, to Hitachi, Ltd. Differential pressure measuring transducer assembly. 4,364,276, Cl. 73-721.000.
Shimizu, Hirokazu: *See*—
Sugino, Takashi; Shimizu, Hirokazu; Wada, Masaru; and Itoh, Kunio, 4,365,336, Cl. 372-45.000.
Shimizu, Michimasa: *See*—
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,365,048, Cl. 526-128.000.
Shimizu, Noboru; Yoshida, Hiroshi; Daigo, Hiromiki; Matumoto, Shiyouichi; and Uchino, Hiroyoshi, to Nippon Shokubai Kagaku Kogyo Co. Ltd. Process for producing 2-hydroxyalkyl acrylates or methacrylates. 4,365,081, Cl. 560-209.000.
Shimizu, Takahiko: *See*—
Kohno, Tadashi; Shimizu, Takahiko; Takahashi, Kenji; Fukui, Hishao; Okubo, Akio; and Masuda, Noriaki, 4,364,684, Cl. 401-264.000.
Shimizu, Toshio: *See*—
Ozawa, Masaru; Ooba, Yuji; and Shimizu, Toshio, 4,365,254, Cl. 346-1.100.
Shimizu, Yasushi: *See*—
Shimazoe, Michitaka; Matsuoka, Yoshitaka; Akahane, Ryozo; Shimizu, Yasushi; Nemoto, Hideyuki; and Tanabe, Masanori, 4,364,276, Cl. 73-721.000.
Shimoda, Koji: *See*—
Takizawa, Yoshiyuki; Kashiwazaki, Takashi; Shimoda, Koji; and Kuriyama, Kazumi, 4,365,278, Cl. 360-73.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Imada, Kiyoshi; Abe, Tokuji; and Ueno, Susumu, 4,364,970, Cl. 427-40.000.
Onda, Yoshiro; Muto, Hiroaki; and Maruyama, Kazumasa, 4,365,060, Cl. 536-65.000.
Sato, Yasuhiko; Inomata, Hiroshi; and Okinoshima, Hiroshige, 4,364,809, Cl. 204-159.130.
Shinoda, Nobuhiko: *See*—
Kawamura, Masaharu; Sakurada, Nobuaki; Shinoda, Nobuhiko; Ito, Tadashi; Ito, Fumio; and Murakami, Hiroyashu, 4,364,647, Cl. 354-23.00D.
Shiohara, Masakazu, to Yamaha Hatsudoki Kabushiki Kaisha. Exhaust timing control device for a two-cycle engine. 4,364,346, Cl. 123-323.000.
Shiota, Kazuo: *See*—
Terashita, Takaaki; Shiota, Kazuo; and Nakauchi, Kenji, 4,364,650, Cl. 354-31.000.
Shiozaki, Yasumi: *See*—
Yamada, Koichi; Harato, Takuo; Kato, Hisakatsu; and Shiozaki, Yasumi, 4,364,919, Cl. 423-629.000.
Shirai, Susumu: *See*—
Yuasa, Yoshio; Kisanuki, Toru; and Shirai, Susumu, 4,364,662, Cl. 356-225.000.
Shirasaki, Shinji: *See*—
Tsuzuki, Yoshihiko; Hirabayashi, Yuzi; Shirasaki, Shinji; Matsuyama, Masahiro; and Okazaki, Hiroshi, 4,364,513, Cl. 236-49.000.
Shirley, Roger D.: *See*—
Lower, Ralph C.; and Shirley, Roger D., 4,364,236, Cl. 62-77.000.
Shive, Stewart S., Jr., to Filbert, Janice R. Smock gathering apparatus. 4,364,494, Cl. 223-28.000.
Shoup, Kenneth E. Foldable implement frame and hitch. 4,364,581, Cl. 280-411.00A.
Shumaker, John F., to J. I. Case Company. Loader mechanism. 4,364,705, Cl. 414-713.000.
SIA, Schweizer Schmirgel- u. Schlief-Industrie AG: *See*—
Bitzer, Diethelm; Kramis, Jost; and Ackermann, Jakob, 4,364,746, Cl. 51-298.000.
Sibley, Henry C., to General Signal Corporation. Vital contact isolation circuit. 4,365,164, Cl. 250-551.000.
Sibley, Henry C.; and Rutherford, David B., Jr., to General Signal Corporation. Speed control systems for governing the speed of a vehicle. 4,365,298, Cl. 364-426.000.
Sich, Edward M.: *See*—
Chaput, Guy J.; and Sich, Edward M., 4,365,168, Cl. 307-115.000.
Siegle, Martin: *See*—
Gillessen, Klaus; Rinderle, Heinz; Schairer, Werner; Siegle, Martin; and Malinowski, Christoph, 4,365,244, Cl. 340-782.000.
Siemens Aktiengesellschaft: *See*—
Dornheim, Hans-Peter, 4,365,344, Cl. 378-189.000.
Haendle, Joerg, 4,365,269, Cl. 358-111.000.
Heinzl, Alfred; and Stadler, Heinz, 4,364,270, Cl. 73-298.000.
Klausecker, Karl; and Muller, Manfred, 4,365,286, Cl. 363-58.000.
Kruger, Hans; and Walter, Karl-Heinz, 4,364,640, Cl. 350-345.000.
Mascher, Karl, 4,365,128, Cl. 200-148.00F.
Reeh, Ulrike; and Denk, Hans, 4,365,052, Cl. 528-92.000.
Siffroi, Lucien: *See*—
Fechant, Louis J. M.; Siffroi, Lucien; and Anguille, Jean M., 4,365,223, Cl. 335-281.000.
SIG - Schweizerische Industrie-Gesellschaft: *See*—
Tuns, Heinz-Joseph, 4,364,478, Cl. 206-605.000.
Silchenko, Valery P.: *See*—
Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; Shalimov, Alexandr A.; Furmanov, Jury A.; Silchenko, Valery P.; Shalimov, Sergei A.; Khadzhai, Yaroslav I.; Obolentseva, Galina V.; and Vorobiev, Nikolai E., 4,364,393, Cl. 128-335.500.
Simay, Antal: *See*—
Takacs, Kalman; Kiss nee Ajzert, Ilona; Simay, Antal; Literati Nagy, Peter; Hetyey nee Papp, Maria; Ecsery nee Puskas, Marian; Szekeres, Laszlo; Papp, Gyula; Viragh, Sandor; and Udvardy, Eva, 4,365,064, Cl. 546-148.000.
Simons, Carel A. J.: *See*—
Heemskerk, Jacobus P. J.; Immink, Kornelis A.; and Simons, Carel A. J., 4,365,323, Cl. 369-44.000.
Sinclair, William J.; Straus, Josef; and Garel-Jones, Philip M., to Northern Telecom Limited. Variable attenuation electro-optic device. 4,364,639, Cl. 350-331.00R.
Singer, Robert: *See*—
Eck, Herbert; and Singer, Robert, 4,365,040, Cl. 524-819.000.
Sinha, Ashok K.: *See*—
Kamgar, Avid; and Sinha, Ashok K., 4,364,779, Cl. 148-1.500.
Sinniger, Joseph O., to RCA Corporation. Duty cycle generator with improved resolution. 4,365,202, Cl. 328-58.000.
Sipido, Victor, to Janssen Pharmaceutica N.V. 2,3-Dihydro-imidazo (2,1-b)benzothiazoles compositions useful as anti-parkinsonism agents. 4,364,942, Cl. 424-245.000.
Sipos, Tibor; and Motkowski, Henry F., Jr., to Johnson & Johnson Products, Inc. Sulfonated naphthalene formaldehyde condensation polymers as dental plaque barriers. 4,364,927, Cl. 424-56.000.
Sipos, Tibor: *See*—
Gander, Robert J.; Buck, Carl J.; and Sipos, Tibor, 4,364,924, Cl. 424-49.000.
Skala, Stephen F. Self starting of internal combustion engines based on reactor. 4,364,336, Cl. 123-1.00A.
SKF Nova AB: *See*—
Nilsson, Sven W., 4,364,282, Cl. 74-424.80A.
Skiba, Edwin J.: *See*—
Dwyer, Robert M.; and Skiba, Edwin J., 4,364,231, Cl. 60-577.000.
Skuballa, Werner; Vorbruggen, Helmut; Raduchel, Bernd; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., to Schering

Aktiengesellschaft. 5-Cyano-prostacyclin derivatives and use as medicines. 4,364,950, Cl. 424-263.000.
Skuballa, Werner; Vorbrueggen, Helmut; Loge, Olaf; Vischer, Peter; and Raduchel, Bernd, to Schering Aktiengesellschaft. Prostacyclins and use as medicinal agents. 4,364,951, Cl. 424-263.000.
Slesarev, Boris A.: *See—*
Tarasov, Nikolai M.; Varukha, Nikolai A.; Brontman, Rostislav L.; Slesarev, Boris A.; Zhukov, Anatoly M.; Mizik, Valery V.; Rogachev, Evgeny P.; and Gurnov, Nikolai I., 4,365,137, Cl. 219-137.310.
Small, James E.; and David, Mark E., to Emhart Industries, Inc. Method and control system for controlling apparatus. 4,365,289, Cl. 364-143.000.
Smilgys, Bruno S., to Veeder Root Industries Inc. Rotary drive anti-backlash device. 4,365,146, Cl. 235-131.00R.
Smilgys, Bruno S.: *See—*
Lombardo, Phillip J.; and Smilgys, Bruno S., 4,365,147, Cl. 235-131.00R.
Smith, Alan: *See—*
Dennings, Clifford; and Smith, Alan, 4,364,224, Cl. 57-263.000.
Smith, Anthony J.; and Sheppard, Timothy J., to Racal Automation Limited. Electrical testing apparatus and methods. 4,365,334, Cl. 371-27.000.
Smith, Byron D.; and Erickson, Terrence J. Method and apparatus for supplying fluid to an internal combustion engine. 4,364,370, Cl. 123-575.000.
Smith, Frederic W., to Walker Scientific, Inc. Magnetic field hemostasis. 4,364,377, Cl. 128-1.500.
Smith, Michael V. B., to Engineering Management Services Limited. Method of refrigeration and a refrigeration system. 4,364,242, Cl. 62-99.000.
Smith, Stephen W.: *See—*
Seaholm, Reuel A.; and Smith, Stephen W., 4,364,203, Cl. 49-409.000.
Smith, W. Novis, Jr.; and Bolton, Nelson P., to Advanced Glass Systems Corp. Process for making safety glass laminates subject to nonsymmetrical thermal stress. 4,364,786, Cl. 156-99.000.
Smith, William V. Integrally constructed poultry nesting housing for automatically collecting eggs. 4,364,332, Cl. 119-48.000.
Snow, Robert E., to International Minerals & Chemical Corp. Flotation of phosphate ores containing dolomite. 4,364,824, Cl. 209-167.000.
Societe a Responsabilite Limitee: Societe de Development pour l'Agriculture Sodelvage: *See—*
Foenard, Pierre, 4,364,331, Cl. 119-28.000.
Societe Anonyme de Telecommunications: *See—*
Bargeton, Gilbert L.; and Beynie, Claude P., 4,365,247, Cl. 340-825.010.
Bargeton, Gilbert L.; and Beynie, Claude P., 4,365,248, Cl. 340-825.010.
Societe Anonyme Dite: Compagnie Industrielle des Telecommunications Citalcatel: *See—*
Tallon, Jacques, 4,365,158, Cl. 250-288.000.
Societe Anonyme dite: L'OREAL: *See—*
Griat, Jacqueline; Zabotto, Arlette; and Koulbanis, Constantin, 4,364,930, Cl. 424-81.000.
Societe Chimique Des Charbonnages: *See—*
Meyer, Nicolas; and Cousin, Michel, 4,365,001, Cl. 428-480.000.
Societe d'Etudes Industrielies de Villejuif, Seiv Automation: *See—*
Huet, Alain, 4,364,178, Cl. 33-174.00L.
Societe d'Etudes Scientifiques et Industrielles de l'Ile de France: *See—*
Thominet, Michel; and Perrot, Jacques, 4,364,867, Cl. 548-567.000.
Societe Europeenne des Ceramiques A lumineuses "EUROCERAL": *See—*
Clement, Rene; and Gugliermotte, Francis, 4,364,877, Cl. 264-1.200.
Societe Francaise d'Electrometallurgie SOFREM: *See—*
Cordier, Jean; Demange, Michel; and Idier, Jean, 4,364,771, Cl. 75-58.000.
Societe Generale de Canalisations Sogecan: *See—*
Doucet, Marcel, 4,364,882, Cl. 264-45.900.
Societe Nationale des Poudres et Explosifs: *See—*
Boileau, Sylvie L.; N'Guyen, Thanh-Dung; and Gautier, Jean-Claude C., 4,365,094, Cl. 568-14.000.
Societe Nationale Industrielle Aerospatiale: *See—*
Hubert, Bernard, 4,365,252, Cl. 343-761.000.
Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See—*
Gagnebin, Pierre-Luc; and Ginalski, Pierre, 4,364,668, Cl. 368-80.000.
Perotto, Jean-Felix; and Piguet, Christian, 4,365,243, Cl. 340-712.000.
Soderbaum, Carl U.: *See—*
Brandt, Lennart H.; Hultmark, Ingvar O.; Petersson, Lars H.; and Soderbaum, Carl U., 4,364,711, Cl. 416-142.000.
Soetaert, Guy: *See—*
Debret, Alain; and Soetaert, Guy, 4,364,149, Cl. 16-87.00R.
Solvay & Cie: *See—*
Vanlautem, Noel; and Gilain, Jacques, 4,365,088, Cl. 562-579.000.
Soma, Hiroshi; Iyobe, Makoto; Iijima, Takekazu; and Moriyama, Yutaka, to Pioneer Electronic Corporation. Speaker unit for automotive vehicles. 4,365,113, Cl. 179-1.00E.
Soma, Hiroshi, to Pioneer Electronic Corporation. Automotive loudspeaker having variable speaker orientation and particular electrical connections. 4,365,114, Cl. 179-1.0VE.
Sony Corporation: *See—*
Menezes, William A.; and Kuper, Douglas D., 4,365,313, Cl. 364-900.000.
Ohsawa, Mitsuo; and Nakazawa, Hiroshi, 4,365,326, Cl. 369-268.000.
Sorensen, Eugene R.: *See—*
Louis, Paul R.; Sorensen, Eugene R.; and Ballard, Thomas R., 4,364,723, Cl. 425-384.000.
Sorensen, Ronald J., to Belden Corporation. Wire stripper apparatus. 4,364,289, Cl. 81-9.510.
Sowden, Terence D. Method for connecting together a plurality of webs of flexible material. 4,364,737, Cl. 493-346.000.
Soya, Masahiro; Sato, Isao; and Kurose, Seiji, to Tokico Ltd. Valve device. 4,364,543, Cl. 251-221.000.
Speck, Ulrich; Blaszkiewicz, Peter; Seidelmann, Dieter; and Klieger, Erich, to Schering, Aktiengesellschaft. Novel triiodinated isophthalic acid diamides as nonionic X-ray contrast media. 4,364,921, Cl. 424-5.000.
Sperry Corporation: *See—*
McVicker, Harry J., 4,364,148, Cl. 16-32.000.
Spiess, Irwin: *See—*
Baumann, Robert P.; Blais, Marcel; and Spiess, Irwin, 4,365,059, Cl. 536-35.000.
Spirin, Evgeny T.: *See—*
Gorbatov, Vasily M.; Spirin, Evgeny T.; Shakhov, Vladimir V.; Vagin, Viktor V.; Khromov, Vyacheslav I.; Bogushev, Zimel A.; Eremin, Viktor I.; Vainzof, Kaletta M.; and Podkhvatilin, Evgeny R., 4,364,309, Cl. 99-352.000.
SPS Technologies, Inc.: *See—*
Binns, Lloyd S., 4,364,697, Cl. 411-38.000.
Stabley, Bernard D., Jr., to Firestone Tire & Rubber Company, The. Ethylene glycol terephthalate production. 4,365,054, Cl. 528-277.000.
Stading, Russell C., to Marison Company, The. Method of fabricating a high pressure tank. 4,364,161, Cl. 29-407.000.
Stadler, Donald A.: *See—*
Furlette, James L.; and Stadler, Donald A., 4,364,471, Cl. 198-751.000.
Stadler, Heinz: *See—*
Heinzl, Alfred; and Stadler, Heinz, 4,364,270, Cl. 73-298.000.
Stafford, David F., to Marinkonsult Hans Lundberg AG. Energy dissipating ball tee. 4,364,563, Cl. 273-26.00R.
Stamp, Donald F., to Electric Furnace Company, The. Continuous strip preheat furnace and method of operation. 4,364,728, Cl. 432-8.000.
Standard Havens, Inc.: *See—*
Clements, Jack T.; and Mace, Robert E., 4,364,758, Cl. 55-365.000.
Standard Oil Company, The: *See—*
Bremer, Noel J.; Dria, Dennis E.; and Weber, Andrew M., 4,365,069, Cl. 549-260.000.
Teng, Harry H. I.; and Pedersen, S. Erik, 4,364,856, Cl. 252-437.000.
Standard Oil Company (Indiana): *See—*
Fahrig, Robert J.; and Hinrichs, Lansing M., 4,364,905, Cl. 422-144.000.
Schneider, Abraham; Khelghatian, Habet M.; Hague, Louise D.; and Jezl, James L., 4,365,045, Cl. 525-247.000.
Weil, Thomas A., 4,364,745, Cl. 48-209.000.
Standun, Inc.: *See—*
Crago, Terril M., 4,364,452, Cl. 184-7.00E.
Stang, John H., to Cummins Engine Company, Inc. Fluid engine. 4,364,233, Cl. 60-712.000.
Stankowitz, James L. Texture applicator. 4,364,521, Cl. 239-346.000.
Stapel, Wilhelm: *See—*
Niehaus, Hermann; Droste, Gunter; and Stapel, Wilhelm, 4,364,319, Cl. 112-238.000.
Star Seimitsu Kabushiki Kaisha: *See—*
Maeda, Katsumi, 4,364,680, Cl. 400-220.100.
Stark, Virgil, to North American Construction Utility Corp. Apparatus for collecting solar energy at high altitudes and on floating structures. 4,364,532, Cl. 244-30.000.
Starkovich, John A., to United States of America, Army. Aqueous oxidative scrubber systems for removal of mercury. 4,364,775, Cl. 134-3.000.
States Engineering Corporation: *See—*
Geeting, Marvin D., 4,364,441, Cl. 175-84.000.
Stauffer Chemical Company: *See—*
Caffy, Russell B.; Carron, Mark S.; Hull, Robert W.; Jain, Pawan K.; and Mickley, Harold S., 4,364,911, Cl. 423-317.000.
Mink, Robert I.; and Epstein, Ronald A., 4,364,853, Cl. 252-429.00B.
Steel Heddle Manufacturing Company: *See—*
Kramer, Charles F., 4,364,420, Cl. 139-91.000.
Stefanska, Barbara J.: *See—*
Falkowski, Leonard S.; Stefanska, Barbara J.; Troka, Elzbieta; Golik, Jerzy J.; and Borowski, Edward, 4,365,058, Cl. 536-6.500.
Stegens, Ronald E., to Communications Satellite Corporation. Coplanar waveguide mounting structure and test fixture for microwave integrated circuits. 4,365,195, Cl. 324-158.00F.
Steiger, Emile. Method and apparatus for contacting work surfaces with liquids. 4,364,799, Cl. 204-15.000.
Stellar Systems, Inc.: *See—*
Mongeon, Ronald W., 4,365,239, Cl. 340-564.000.
Sterling Drug Inc.: *See—*
Lesher, George Y.; and Philion, Richard E., 4,365,065, Cl. 546-334.000.
Stern, Harry; and Airesman, Charles, to Allegany Technology, Inc. Shear beam load cell system. 4,364,279, Cl. 73-862.660.

Stevenson, William D., to Vickers Limited. Vertical stressed mooring tether in a floating oil platform. 4,364,323, Cl. 114-265.000.

Stewart, Lamar H.: *See*—
Beck, Boyd R.; Stewart, Lamar H.; Tapp, Steven; Anderson, Don L., Jr.; and Nuffer, Daniel E., 4,364,797, Cl. 202-181.000.

Stich, Willi L. Musical instrument sound pickup and method of assembly thereof. 4,364,295, Cl. 84-1.150.

Stief, Horst. Slide-screen for back projection. 4,364,635, Cl. 350-125.000.

Stiefel, Peter: *See*—
Wissmann, Michael; and Stiefel, Peter, 4,364,362, Cl. 123-454.000.

Stil Sun Oil, Inc.: *See*—
Beck, Boyd R.; Stewart, Lamar H.; Tapp, Steven; Anderson, Don L., Jr.; and Nuffer, Daniel E., 4,364,797, Cl. 202-181.000.

Stock, Gunter: *See*—
von Ropenack, Adolf; Stock, Gunter; and Heubner, Ulrich, 4,364,807, Cl. 204-114.000.

Stockken, Richard A., to Nizdorf Computer Corporation. Modular terminal system using a common bus. 4,365,294, Cl. 364-200.000.

Stokes, Jimmy L.: *See*—
Greenway, John M.; and Stokes, Jimmy L., 4,364,156, Cl. 26-2.00R.

Stolle Corporation, The: *See*—
Byrd, James I., 4,364,255, Cl. 72-345.000.

Storage Technology Corporation: *See*—
Ruether, Peter G.; and O'Neill, John F., 4,365,112, Cl. 179-1.0SC.

Strassel, Albert, to Chimiques Ugine Kuhlmann. Process for the manufacture of polyvinylidene fluoride - incompatible polymer laminates. 4,364,886, Cl. 264-171.000.

Straus, Josef: *See*—
Sinclair, William J.; Straus, Josef; and Garel-Jones, Philip M., 4,364,639, Cl. 350-331.00R.

Streight, William E.: *See*—
Gardner, Chester S.; and Streight, William E., 4,364,663, Cl. 356-371.000.

Stroh, Artur: *See*—
Diehl, Erwin; Muller, Wolfgang; and Stroh, Artur, 4,364,978, Cl. 427-433.000.

Stromberg, Per S. Plastics fish box. 4,364,477, Cl. 206-511.000.

Stroppel, Karl-Gunter: *See*—
Schulz, Siegfried; Stroppel, Karl-Gunter; and Meckel, Bernd, 4,364,240, Cl. 62-476.000.

Strother, Charles M.; and Kudva, Balakrishna V., to Wisconsin Alumni Research Foundation. Detachable balloon catheter. 4,364,392, Cl. 128-325.000.

Subramaniam, Anand, to Cooper Industries, Inc. Air-fuel ratio controller. 4,364,364, Cl. 123-527.000.

Suematsu, Toshio: *See*—
Miyagi, Hideo; and Suematsu, Toshio, 4,364,349, Cl. 123-339.000.

Sueyoshi, Toshinobu: *See*—
Andoh, Haruo; Kitaoka, Susumu; Sueyoshi, Toshinobu; Ishida, Hikaru; and Kato, Akira, 4,364,988, Cl. 428-212.000.

Sugimoto, Osamu: *See*—
Hayashi, Yukichi; Tamura, Masauuki; Sugimoto, Osamu; Takizawa, Masayoshi; Nishioka, Tatsujiro; Akagawa, Masaki; and Yokohda, Yutaka, 4,364,404, Cl. 133-4.00A.

Sugino, Takashi; Shimizu, Hirokazu; Wada, Masaru; and Itoh, Kunio, to Matsushita Electric Industrial Co., Ltd. Terraced substrate semiconductor laser. 4,365,336, Cl. 372-45.000.

Sugiyama, Hiroshige, to Toyo Boseki Kabushiki Kaisha. Synthetic fibers having down/feather-like characteristics and suitable for wadding. 4,364,996, Cl. 428-369.000.

Sulkowski, Theodore S.; Bergey, James L.; and Mascitti, Albert A., to American Home Products Corporation. Antihypertensive agents. 4,365,063, Cl. 546-123.000.

Sullivan, Ann C.: *See*—
Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,365,070, Cl. 549-263.000.

Sullivan, Timothy A.; and Whitfield, James, Jr., to Owens-Corning Fiberglas Corporation. Mineral fiber forming. 4,364,762, Cl. 65-2.000.

Sulzer Morat GmbH: *See*—
Kunde, Klaus, 4,364,243, Cl. 66-9.00B.
Leins, Eberahrd; Walter, Manfred; and Gaiser, Willi, 4,364,245, Cl. 66-78.000.
Leins, Eberhard; Walter, Manfred; and Gaiser, Willi, 4,364,246, Cl. 66-145.00R.

Sumida, Kunio A. Air operated reciprocating tool. 4,364,303, Cl. 91-329.000.

Sumitomo Aluminium Smelting Company, Limited: *See*—
Yamada, Koichi; Harato, Takuo; Kato, Hisakatsu; and Shiozaki, Yasumi, 4,364,919, Cl. 423-629.000.

Sumitomo Chemical Company, Limited: *See*—
Saito, Shinichi; Aikawa, Kazuo; Orino, Michio; Aoi, Kazuya; and Kusakabe, Hideo, 4,365,057, Cl. 528-503.000.
Shiga, Akinobu; Fukui, Yoshiharu; Sasaki, Toshio; Okawa, Masahisa; Matsu-Ura, Hideaki; and Yamada, Yasuharu, 4,364,851, Cl. 252-429.00B.
Takenaka Masaaki; Takahashi, Tsutomu; and Momobayashi, Tatuya, 4,365,091, Cl. 564-127.000.

Sumitomo Kinzoku Kogyo Kabushiki Gaisha: *See*—
Tatsuwaki, Masao; Nemoto, Shin; Katayama, Yutaka; Okada, Michio; and Hotta, Kazuyuki, 4,365,307, Cl. 364-557.000.

Sunbeam Corporation: *See*—
Bast, Eleanor A.; DuBois, Jean-Pierre; and MacLagen, Robert T., 4,365,140, Cl. 219-225.000.

Sundeen, Arthur R.: *See*—
Romblom, Edward R.; and Sundeen, Arthur R., 4,364,351, Cl. 123-357.000.

Sunder-Plassmann, Paul, to Chemische Werke Huls AG. Process for producing 2-(C_1 to C_3 alkyl)-Δ^2-oxazoline copolymers. 4,365,056, Cl. 528-403.000.

Sutter, Ormond S.: *See*—
Sharp, Joseph F.; Sutter, Ormond S.; and Cornwell, Philip W., 4,364,686, Cl. 403-347.000.

Suzuki, Kenichi: *See*—
Umemura, Sumio; Ohdan, Kyoji; Sakai, Fumihiko; Suzuki, Kenichi; Bando, Yasuo; Hogami, Toshihiko; and Fuginaga, Masataka, 4,364,844, Cl. 252-435.000.

Suzuki, Kenji: *See*—
Kanai, Tamaki; Yamagichi, Takashi; Yoshikawa, Hirofumi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,364,885, Cl. 264-134.000.

Suzuki, Mituo: *See*—
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Suzuki, Mituo; and Nakamura, Kenji, 4,365,250, Cl. 340-825.320.

Svatek, Katherine H.; Wilson, David A.; and Griffin, Freddie, Jr., to Dow Chemical Company, The. Process for making aminopolycarboxylic acid chelates of iron. 4,364,871, Cl. 260-439.00R.

Svenska Rayon AB: *See*—
Treiber, Erich E.; Ehrengard, Dag E.; and Lidbrandt, Owe S., 4,364,890, Cl. 264-191.000.

Sweco, Incorporated: *See*—
LaMar, Stephen R., 4,364,275, Cl. 73-649.000.

Swift, Harold E.: *See*—
Marcelin, George; Vogel, Roger F.; and Swift, Harold E., 4,365,095, Cl. 568-462.000.

Syarto, Louis W.; and Zimmerman, Sanford S. Edge finishing machine. 4,364,696, Cl. 409-138.000.

Synowicki, Walter. Jewelry clasp. 4,364,155, Cl. 24-217.00R.

Sytek Corporation: *See*—
Biba, Kenneth J.; and Picazo, Jose J., Jr., 4,365,331, Cl. 370-124.000.

Szantay, Csaba; Novak, Lajos; Toth, Miklos; Jakab, Jozsef; Kis-tamas, Attila; and Ujvari, Istvan, to Egyt Gyogyszervegyeszeti Gyar. Composite insect attractant for male white-line dart moths and a process for preparing the active ingredients thereof. 4,364,931, Cl. 424-84.000.

Szarka, David D., to Halliburton Company. Anchor positioner assembly. 4,364,430, Cl. 166-214.000.

Szejtli, Jozsef; Budai, Zsuzsanna; Pap nee Imrenyi, Gabriella; and Kerekes, Andras, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Inclusion complexes of cyclodextrins and strong inorganic oxy-acids and process for their preparation. 4,365,061, Cl. 536-103.000.

Szekeres, Laszlo: *See*—
Takacs, Kalman; Kiss nee Ajzert, Ilona; Simay, Antal; Literati Nagy, Peter; Hetyey nee Papp, Maria; Ecsery nee Puskas, Marian; Szekeres, Laszlo; Papp, Gyula; Viragh, Sandor; and Udvardy, Eva, 4,365,064, Cl. 546-148.000.

Szuchy, Nicholas C.: *See*—
McRae, Daniel D.; Clark, George C.; and Szuchy, Nicholas C., 4,365,338, Cl. 375-12.000.

Szvoboda, Gyorgy: *See*—
Gado, Istvan; Jekkel nee Bokany, Antonia; Szvoboda, Gyorgy; Jarai, Miklos; Piukovich, Sandor; and Istvan, Sandor, 4,365,020, Cl. 435-80.000.

Tabata, Hideyo; Kuwahara, Yoshitaka; Machida, Michihide; Kume, Shyoichi; Iga, Takeo; Saitoh, Kazuo; and Tomura, Shinji, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method for manufacture of high-strength sintered article of substances having β-silicon nitride type crystal structure. 4,365,022, Cl. 501-97.000.

Tabata, Toshio, to Pioneer Electronic Corporation. Line monitoring device in two-way data communication system. 4,365,249, Cl. 340-825.300.

Taddei, Franco, to Casper S.p.A. Lower pair kinematic assembly with hydrostatic bearing. 4,364,612, Cl. 308-5.00R.

Tajima, Masahiko: *See*—
Kondo, Toshio; Kobayashi, Akio; Eino, Tomomi; and Tajima, Masahiko, 4,365,299, Cl. 364-431.060.

Tajima, Yasutomo: *See*—
Takahashi, Noriyuki; Sakaguchi, Takumi; and Tajima, Yasutomo, 4,364,582, Cl. 280-698.000.

Takacs, Kalman; Kiss nee Ajzert, Ilona; Simay, Antal; Literati Nagy, Peter; Hetyey nee Papp, Maria; Ecsery nee Puskas, Marian; Szekeres, Laszlo; Papp, Gyula; Viragh, Sandor; and Udvardy, Eva, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. 1,2,4-Oxadiazolin-5-one derivatives, process for their preparation and pharmaceutical compositions containing them. 4,365,064, Cl. 546-148.000.

Takagi, Kazumasa: *See*—
Oi, Tetsu; Takagi, Kazumasa; and Fukazawa, Tokuumi, 4,365,155, Cl. 378-49.000.

Takahashi, Kenji: *See*—
Kohno, Tadashi; Shimizu, Takahiko; Takahashi, Kenji; Fukui, Hishao; Okubo, Akio; and Masuda, Noriaki, 4,364,684, Cl. 401-264.000.

Takahashi, Kiyofumi: *See*—
Tomibe, Shinji; Gomibuchi, Reizo; and Takahashi, Kiyofumi, 4,364,739, Cl. 8-654.000.

Takahashi, Masami: *See*—
Shibuya, Yoshimichi; Takahashi, Masami; and Ishibashi, Tadashi, 4,364,672, Cl. 368-240.000.

Takahashi, Noboru: *See*—
Nakano, Nobumasa; Takahashi, Noboru; and Aoki, Masao, 4,365,312, Cl. 364-900.000.
Takahashi, Noriyuki; Sakaguchi, Takumi; and Tajima, Yasutomo, to Honda Giken Kogyo Kabushiki Kaisha & Showa Mfg. Co., Ltd. Vehicle body suspension system. 4,364,582, Cl. 280-698.000.
Takahashi, Shigeru: *See*—
Mukai, Kiichiro; Harada, Seiki; Muramatsu, Shin-ichi; Hiraiwa, Atsushi; Takahashi, Shigeru; Usami, Katsuhisa; Iwata, Seiichi; Ito, Satoru; and Yoshimi, Takeo, 4,365,264, Cl. 357-54.000.
Takahashi, Shigeyuki; Yamamoto, Shozo; and Tsukane, Nagayoshi, to Daicel Chemical Industries Ltd. Coated plastic films. 4,365,002, Cl. 428-483.000.
Takahashi, Takeshi: *See*—
Oshima, Masabumi; Honda, Haruo; and Takahashi, Takeshi, 4,365,126, Cl. 200-144.0AP.
Takahashi, Tsutomu: *See*—
Takenaka Masaaki; Takahashi, Tsutomu; and Momobayashi, Tatuya, 4,365,091, Cl. 564-127.000.
Takahashi, Yoshiharu: *See*—
Ohtsuka, Katsuyuki; Ohuchi, Jin; and Takahashi, Yoshiharu, 4,364,859, Cl. 252-643.000.
Takase, Yoshiyuki: *See*—
Yokogawa, Kanae; Yamamoto, Takeshi; Takase, Yoshiyuki; Katae, Hiromi; and Kawata, Shigeo, 4,364,926, Cl. 424-50.000.
Takasugi, Hisashi: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,364,943, Cl. 424-246.000.
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, to Fujisawa Pharmaceutical Co., Ltd. Syn-isomer of 7-[2-alkoxyimino-2-(2-amino-alkanoylamino-or haloalkanoylamino-thiazol-4-yl) acetamids]-3-[hexanoyl-, or phenylalkanoyl-oxymethyl or benzothiazolylthiomethyl]-3-cephem-4-carboxylic acid. 4,364,943, Cl. 424-246.000.
Takazawa, Yuzuru: *See*—
Kitai, Kiyoshi; and Takazawa, Yuzuru, 4,364,648, Cl. 354-25.000.
Takeda Chemical Industries, Ltd.: *See*—
Asai, Mitsuko; Nakahama, Kazuo; and Izawa, Motowo, 4,364,866, Cl. 260-239.30P.
Takemae, Yoshihiro, to Fujitsu Limited. Semiconductor memory device. 4,365,319, Cl. 365-200.000.
Takemura, Yukio: *See*—
Seto, Susumu; Tokuhara, Mitsuhiro; Takemura, Yukio; Yamada, Yu; and Kuwayama, Takeshi, 4,364,658, Cl. 355-8.000.
Takenaka Masaaki; Takahashi, Tsutomu; and Momobayashi, Tatuya, to Sumitomo Chemical Company, Limited. Method for the production of acrylamide. 4,365,091, Cl. 564-127.000.
Takenouchi, Mutsuo; and Sadamatsu, Shigeru, to Fuji Xerox Co., Ltd. One-dimensional image sensor. 4,365,274, Cl. 358-293.000.
Takeuchi, Hirosato; Degawa, Fumito; and Mikiya, Toshio, to Nitto Kohki Co. Solar collector system. 4,364,373, Cl. 126-418.000.
Takizawa, Masayoshi: *See*—
Hayashi, Yukichi; Tamura, Masauuki; Sugimoto, Osamu; Takizawa, Masayoshi; Nishioka, Tatsujiro; Akagawa, Masaki; and Yokohda, Yutaka, 4,364,404, Cl. 133-4.00A.
Takizawa, Yoshiyuki; Kashiwazaki, Takashi; Shimoda, Koji; and Kuriyama, Kazumi, to Pioneer Electronic Corporation. Device for detecting non-recorded portions on magnetic tape. 4,365,278, Cl. 360-73.000.
Tallon, Jacques, to Societe Anonyme Dite: Compagnie Industrielle des Telecommunications Citalcatel. Helium leakage detector. 4,365,158, Cl. 250-288.000.
Tamaru, Sinji: *See*—
Tsunoda, Takahiro; Yamaoka, Tsuguo; and Tamaru, Sinji, 4,365,049, Cl. 526-245.000.
Tamburini, Pierluigi, to Gilardini S.p.A. Seat for vehicles. 4,364,607, Cl. 297-452.000.
Tamura, Masauuki: *See*—
Hayashi, Yukichi; Tamura, Masauuki; Sugimoto, Osamu; Takizawa, Masayoshi; Nishioka, Tatsujiro; Akagawa, Masaki; and Yokohda, Yutaka, 4,364,404, Cl. 133-4.00A.
Tanabe, Masanori: *See*—
Shimazoe, Michitaka; Matsuoka, Yoshitaka; Akahane, Ryozo; Shimizu, Yasushi; Nemoto, Hideyuki; and Tanabe, Masanori, 4,364,276, Cl. 73-721.000.
Tanaka, Katsuo, to Fujitsu Limited. Resistor module. 4,365,284, Cl. 361-395.000.
Tanaka, Kazuo; and Hirose, Ryusho, to Canon Kabushiki Kaisha. Zoom element focusable zoom lens. 4,364,642, Cl. 350-429.000.
Tanaka, Naoto: *See*—
Murai, Keiichi; Tanaka, Naoto; and Kondo, Hideyo, 4,364,329, Cl. 118-652.000.
Tanaka, Shigeru: *See*—
Terada, Atsusuke; Tanaka, Shigeru; and Misaka, Eiichi, 4,365,076, Cl. 560-51.000.
Tandem Computers Incorporated: *See*—
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,365,295, Cl. 364-200.000.
Tani, Akira; and Yamazaki, Takeo, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Parking brake releasing system with cable attaching bush. 4,364,284, Cl. 74-540.000.
Taniguchi, Hitoshi: *See*—
Teranishi, Susumu; Kawasaki, Yoichi; Katayama, Tsutomu; and Taniguchi, Hitoshi, 4,364,862, Cl. 260-112.00R.
Tapco Products Company, Inc.: *See*—
Chubb, Arthur B.; and Rhoades, James J., 4,364,254, Cl. 72-319.000.
Tapp, Steven: *See*—
Beck, Boyd R.; Stewart, Lamar H.; Tapp, Steven; Anderson, Don L., Jr.; and Nuffer, Daniel E., 4,364,797, Cl. 202-181.000.
Tarasov, Nikolai M.; Varukha, Nikolai A.; Brontman, Rostislav L.; Slesarev, Boris A.; Zhukov, Anatoly M.; Mizik, Valery V.; Rogachev, Evgeny P.; and Gurnov, Nikolai I. Apparatus for electric-arc gas-shielded surfacing by droplets with consumable electrode. 4,365,137, Cl. 219-137.310.
Tasch, Aloysious F., Jr.: *See*—
Chatterjee, Pallab K.; and Tasch, Aloysious F., Jr., 4,365,261, Cl. 357-24.000.
Tateyama, Masayuki; and Hosotani, Takashi, to Nissan Motor Company, Limited. Steering mechanism. 4,364,577, Cl. 280-93.000.
Tatsuwaki, Masao; Nemoto, Shin; Katayama, Yutaka; Okada, Michio; and Hotta, Kazuyuki, to Sumitomo Kinzoku Kogyo Kabushiki Gaisha. Temperature pattern measuring device. 4,365,307, Cl. 364-557.000.
Tauber, George. Parking indicator token strip. 4,364,461, Cl. 194-4.00D.
Taylor, George A., to A. W. Anderberg Manufacturing Co. Full-opening window linkage assembly. 4,364,201, Cl. 49-248.000.
Teichmann, Paul: *See*—
Beneke, Wolfgang; Teichmann, Paul; and Schubert, Wolfgang, 4,364,151, Cl. 19-0.200.
Beneke, Wolfgang; Jager, Walter; and Teichmann, Paul, 4,364,153, Cl. 19-107.000.
Teichmann, Theodor: *See*—
O'Neal, Russell D.; Leffert, Charles B.; Teichmann, Theodor; and Teitel, Robert J., 4,364,897, Cl. 376-148.000.
Teijin Limited: *See*—
Kanai, Tamaki; Yamagichi, Takashi; Yoshikawa, Hirofumi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,364,885, Cl. 264-134.000.
Kiyoki, Mamoru; Endo, Hiroyoshi; Naruchi, Tatsuyuki; and Hashimoto, Yoshinobu, 4,364,941, Cl. 424-236.000.
Teijin Pharmaceutical Co., Ltd.: *See*—
Kiyoki, Mamoru; Endo, Hiroyoshi; Naruchi, Tatsuyuki; and Hashimoto, Yoshinobu, 4,364,941, Cl. 424-236.000.
Teitel, Robert J.: *See*—
O'Neal, Russell D.; Leffert, Charles B.; Teichmann, Theodor; and Teitel, Robert J., 4,364,897, Cl. 376-148.000.
Tektronix, Inc.: *See*—
Bateman, Roger S., 4,365,150, Cl. 250-207.000.
Telefonaktiebolaget L M Ericsson: *See*—
Lindman, Borje L.; and Branden, Leif, 4,365,118, Cl. 179-159.000.
Telex Computer Products, Inc.: *See*—
Ogan, Robert M., 4,364,678, Cl. 400-202.200.
Tellier, Pierre: *See*—
DeLavarenne, Serge Y.; and Tellier, Pierre, 4,365,100, Cl. 568-733.000.
Temme, Helmut, to Gewerkschaft Eisenhutte Westfalia. Scraper-chain conveyor. 4,364,470, Cl. 198-735.000.
Teng, Harry H. I.; and Pedersen, S. Erik, to Standard Oil Company, The. Mixed metal phosphorus oxide coated catalysts for the oxidative dehydrogenation of carboxylic acids. 4,364,856, Cl. 252-437.000.
Tennant Company: *See*—
Hawkins, Raymond C.; Seim, Howard N.; and Haub, Donald J., 4,365,189, Cl. 318-284.000.
Terada, Atsusuke; Tanaka, Shigeru; and Misaka, Eiichi, to Sankyo Company Limited. Process for the preparation of cycloalkylidenemethylphenylacetic acid derivatives. 4,365,076, Cl. 560-51.000.
Terada, Katumi, to Olympus Optical Company Ltd. Film suction mechanism for a camera. 4,364,653, Cl. 354-203.000.
Teranishi, Susumu; Kawasaki, Yoichi; Katayama, Tsutomu; and Taniguchi, Hitoshi, to Fuji Oil Company, Limited. Method for preparing fibrous protein products. 4,364,862, Cl. 260-112.00R.
Terashita, Takaaki; Shiota, Kazuo; and Nakauchi, Kenji, to Fuji Photo Film Co., Ltd. Exposure control method and device. 4,364,650, Cl. 354-31.000.
Terrell, Ross C.; and Hansen, Kirsten, to Airco, Inc. Process for the preparation of halogenated aliphatic ethers. 4,365,097, Cl. 568-684.000.
Terwilliger, Gerald L., to Eaton Corporation. Induction system for supercharged engine. 4,364,366, Cl. 123-564.000.
Terwilliger, Gerald L., to Eaton Corporation. Linkage mechanism for supercharger system. 4,364,367, Cl. 123-564.000.
Tesch, Bernhard. Watch cases with pushbuttons. 4,364,674, Cl. 368-319.000.
Tesmann, Holger: *See*—
Grunert, Margarete; Schmid, Karl; and Tesmann, Holger, 4,364,777, Cl. 134-29.000.
Tessier, Jean: *See*—
Martel, Jacques; Tessier, Jean; Girault, Pierre; and Grandadam, Jean A., 4,364,928, Cl. 424-79.000.
Tetra Pak International AB: *See*—
Rausing, Hans A., 4,364,220, Cl. 53-411.000.
Texaco Inc.: *See*—
Arnold, Dan M.; and Paap, Hans J., 4,365,154, Cl. 250-270.000.
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,364,744, Cl. 48-86.00R.
Kaufman, Benjamin J., 4,364,846, Cl. 252-392.000.

Nieh, Edward C. Y., 4,365,096, Cl. 568-665.000.
Rundell, Herbert A., 4,364,277, Cl. 73-862.340.
Woodle, Robert A.; and Gillespie, Ronald G., 4,364,262, Cl. 73-53.000.

Texas Gas Transmission Corporation: *See—*
O'Neal, Russell D.; Leffert, Charles B.; Teichmann, Theodor; and Teitel, Robert J., 4,364,897, Cl. 376-148.000.

Texas Instruments Incorporated: *See—*
Chatterjee, Pallab K.; and Tasch, Aloysious F., Jr., 4,365,261, Cl. 357-24.000.
Olsen, Donald A.; and Boulanger, Henry J., 4,365,225, Cl. 337-88.000.
Prater, Cordell E., 4,365,172, Cl. 307-270.000.

Th. Goldschmidt AG: *See—*
Diehl, Erwin; Muller, Wolfgang; and Stroh, Artur, 4,364,978, Cl. 427-433.000.

Thalmann, Alfred: *See—*
Reich, Fritz; and Thalmann, Alfred, 4,365,144, Cl. 219-535.000.

Thames Water Authority: *See—*
Crane, Norman W., 4,364,141, Cl. 15-104.06R.

Theodore, Ares N.; and Pett, Robert A., to Ford Motor Company. Ultrasonic end-capping of beta"-alumina tubes. 4,364,783, Cl. 156-69.000.

Theysohn, Friedrich, to Friedrich Theysohn, Firma. Dual worm extruder having wear resistant bore walls. 4,364,664, Cl. 366-84.000.

Thibault, Gilbert: *See—*
Tiedemann, Herman H.; Thibault, Gilbert; and Laberge, Joseph G. J., 4,364,917, Cl. 423-474.000.

Thoenig, Marcel; and Wattenhofer, Jean-Pierre, to Ebauches, S.A. Chronographic watch. 4,364,669, Cl. 368-111.000.

Thomas, David L.; Pope, William S.; and Huckabay, William B., to Battelle Memorial Institute. Generating pulses. 4,364,446, Cl. 181-120.000.

Thomas, John F., Jr.: *See—*
Morgan, Cleon; Pluta, Richard; and Thomas, John F., Jr., 4,364,214, Cl. 52-311.000.
Morgan, Cleon; Thomas, John F., Jr.; and Meyer, Raymond A., 4,364,595, Cl. 296-84.00R.

Thominet, Michel; and Perrot, Jacques, to Societe d'Etudes Scientifiques et Industrielles de l'Ile de France. N-(1-Methyl-2-pyrrolidinylmethyl)-2,3-dimethoxy-5-methylsulfamoyl benzamide and its derivatives. 4,364,867, Cl. 548-567.000.

Thompson, Donald: *See—*
McDaniel, Wharton; Brown, Fred A.; and Thompson, Donald, 4,365,187, Cl. 318-254.000.

Thompson, Robert W.: *See—*
Pyatt, Lawrence A.; and Thompson, Robert W., 4,365,197, Cl. 324-221.000.

Thompson, Steven R., to Garlock, Inc. Band seal clamp. 4,364,588, Cl. 285-419.000.

Thomsen, Svend E.; and Christensen, Thorkild, to Danfoss A/S. Hydraulic control apparatus for a servo-motor, particularly for vehicle steering. 4,364,302, Cl. 91-29.000.

Thomson - CSF: *See—*
Arondel, Patrick; and Lepeytre, Jean P., 4,364,631, Cl. 350-503.000.
Berger, Jean L.; and Coutures, Jean L., 4,365,217, Cl. 333-165.000.
Croset, Michel; and Velasco, Gonzalo, 4,364,226, Cl. 60-276.000.
Dehaene, Jean P., 4,365,205, Cl. 329-122.000.
Sauvanet, Maurice, 4,365,329, Cl. 370-100.000.

Thomson-CSF Telephone: *See—*
Merriaux, Philippe M. F.; and Nicolas, Jean-Yves, 4,365,328, Cl. 370-60.000.

Tiedemann, Herman H.; Thibault, Gilbert; and Laberge, Joseph G. J., to C-I-L Inc. Continuous process for making calcium hypochlorite. 4,364,917, Cl. 423-474.000.

Tiegel, Ralph: *See—*
Lyman, Oscar; and Tiegel, Ralph, 4,364,546, Cl. 256-24.000.

Timberland Equipment Limited: *See—*
Paladino, Anthony, 4,364,316, Cl. 111-3.000.

Timetz, Ltd.: *See—*
Shiber, Samuel, 4,364,229, Cl. 60-414.000.

Timmler, Helmut: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,364,955, Cl. 424-269.000.

Titanium Metals Corporation of America: *See—*
Niemond, Larry A.; Helwig, Michael W., Jr.; and Connare, Thomas J., 4,364,772, Cl. 75-126.00R.

Toagosei Chemical Industry Co., Ltd.: *See—*
Kimura, Kaoru; and Sakabe, Kazuyuki, 4,364,876, Cl. 260-465.400.

Tobioka, Sigeki: *See—*
Tsujita, Kaoru; Tobioka, Sigeki; and Monden, Ikuo, 4,365,265, Cl. 358-29.000.

Todd, Alec: *See—*
Clark, Barry P.; Ross, William J.; and Todd, Alec, 4,364,956, Cl. 424-269.000.

Tokarz, Richard D., to United States of America, Energy. High temperature sensor. 4,365,229, Cl. 338-25.000.

Tokico Ltd.: *See—*
Oshima, Harumi, 4,364,455, Cl. 188-1.110.
Saito, Tetsuo, 4,364,574, Cl. 280-6.00R.
Soya, Masahiro; Sato, Isao; and Kurose, Seiji, 4,364,543, Cl. 251-221.000.

Tokuhara, Mitsuhiro: *See—*
Seto, Susumu; Tokuhara, Mitsuhiro; Takemura, Yukio; Yamada, Yu; and Kuwayama, Takeshi, 4,364,658, Cl. 355-8.000.

Tokunaga, Takeshi: *See—*
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Suzuki, Mituo; and Nakamura, Kenji, 4,365,250, Cl. 340-825.320.

Tokuyama, Mitsuru; Ohki, Kenji; Sagae, Masayuki; and Tsujii, Kaoru, to Kao Soap Co., Ltd. Porous sheet. 4,364,985, Cl. 428-149.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Iwahashi, Hiroshi; and Asano, Masamichi, 4,365,316, Cl. 365-72.000.
Moriwaki, Takeshi; and Tsunekawa, Shinichi, 4,364,617, Cl. 316-24.000.
Oda, Goro, 4,364,660, Cl. 355-15.000.

Tolasch, Gerhard; and Grasse, Hans J., to Hauni-Werke Korber & Co. K.G. Apparatus for transport and temporary storage of cigarettes or the like between producing and processing machines. 4,364,462, Cl. 198-347.000.

Tomar, Julius, to Home of Champions, S.A. Game ball. 4,364,565, Cl. 273-60.00R.

Tomibe, Shinji; Gomibuchi, Reizo; and Takahashi, Kiyofumi, to Nihon Sanmo Dyeing Co., Ltd. Method of making electrically conducting fiber. 4,364,739, Cl. 8-654.000.

Tomita, Yukio: *See—*
Endo, Takuro; Tomita, Yukio; Okamoto, Yukiro; Imaoka, Hiroshi; and Sakiyama, Michio, 4,364,257, Cl. 72-405.000.

Tomlinson, James N. Adjustable cable picture-hanging system. 4,364,538, Cl. 248-495.000.

Tomura, Shinji: *See—*
Tabata, Hideyo; Kuwahara, Yoshitaka; Machida, Michihide; Kume, Shyoichi; Iga, Takeo; Saitoh, Kazuo; and Tomura, Shinji, 4,365,022, Cl. 501-97.000.

Toporek, John R. Heat-recovering apparatus for furnaces. 4,364,514, Cl. 237-55.000.

Tornquist, August. Wind power converter. 4,364,709, Cl. 416-132.00B.

Torrenteras, Angel E.; and Torrenteras, Antonio E. Device for automatically opening and filling boxes. 4,364,217, Cl. 53-58.000.

Torrenteras, Antonio E.: *See—*
Torrenteras, Angel E.; and Torrenteras, Antonio E., 4,364,217, Cl. 53-58.000.

Toth, James M., to Republic Steel Corporation. Method and apparatus for detecting, classifying and marking defects in workpiece with improved timing control. 4,365,198, Cl. 324-226.000.

Toth, Miklos: *See—*
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Jakab, Jozsef; Kistamas, Attila; and Ujvari, Istvan, 4,364,931, Cl. 424-84.000.

Touchette, Bernard, to B. R. Choiniere Ltee. Cattle feeder. 4,364,333, Cl. 119-52.00R.

Town, Michael H.: *See—*
Skuballa, Werner; Vorbruggen, Helmut; Raduchel, Bernd; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,364,950, Cl. 424-263.000.

Toye, Frederic J. Tracheostomy apparatus and method. 4,364,391, Cl. 128-305.300.

Toyo Boseki Kabushiki Kaisha: *See—*
Sugiyama, Hiroshige, 4,364,996, Cl. 428-369.000.

Toyo Kogyo Co., Ltd.: *See—*
Matsuoka, Tsutomu, 4,364,357, Cl. 123-440.000.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Fujimoto, Teruo; Nagasawa, Mitsuru; and Ohno, Syotaro, 4,365,023, Cl. 521-32.000.

Toyoda, Minoru, to Aisin Seiki Kabushiki Kaisha. Key holder. 4,364,250, Cl. 70-456.00R.

Toyomaki, Yoshio, to Nippon Zoki Pharmaceutical Co., Ltd. Vincamine derivatives useful as cerebral metabolic and circulatory regulators. 4,364,947, Cl. 424-256.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Itoh, Hiroshi; and Kobayashi, Nobuyuki, 4,364,348, Cl. 123-339.000.
Kobayashi, Nobuyuki; and Itoh, Hiroshi, 4,364,350, Cl. 123-339.000.
Miyagi, Hideo, 4,364,347, Cl. 123-339.000.
Miyagi, Hideo; and Suematsu, Toshio, 4,364,349, Cl. 123-339.000.
Miyagi, Hideo; and Nakano, Jiro, 4,364,363, Cl. 123-492.000.
Morisawa, Kunio; and Kyushima, Tatsuo, 4,364,285, Cl. 74-606.00R.
Ogawa, Hisashi, 4,364,583, Cl. 280-802.000.
Tani, Akira; and Yamazaki, Takeo, 4,364,284, Cl. 74-540.000.
Yoshida, Seietsu; Niimi, Yukihide; Ito, Massao; Sawada, Hiroshi; and Demura, Takayuki, 4,364,227, Cl. 60-276.000.

Tracy, George T. Method of playing a strategy game. 4,364,568, Cl. 273-242.000.

Tranchant, Jean-Louis: *See—*
Douchy, Michel; Tranchant, Jean-Louis; and Jehan, Michel, 4,364,770, Cl. 75-53.000.

Traut, G. Robert, to Rogers Corporation. Method of manufacturing a radome. 4,364,884, Cl. 264-118.000.

Trayer, Frank C. Method and apparatus for fusing electrical power equipment enclosed in a tank and surrounded by insulating fluid. 4,365,227, Cl. 337-202.000.

Treiber, Erich E.; Ehrengard, Dag E.; and Lidbrandt, Owe S., to Svenska Rayon AB. Procedure for the preparation of crimped high-wet-modulus staple fibres. 4,364,890, Cl. 264-191.000.

Treybig, James G.: *See—*
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,365,295, Cl. 364-200.000.

Tripodi, Mary K.: *See*—
Brooks, Albert A.; Henis, Jay M. S.; and Tripodi, Mary K., 4,364,759, Cl. 55-487.000.
Troka, Elzbieta: *See*—
Falkowski, Leonard S.; Stefanska, Barbara J.; Troka, Elzbieta; Golik, Jerzy J.; and Borowski, Edward, 4,365,058, Cl. 536-6.500.
Tropic Industries, Inc.: *See*—
Goott, Joseph, 4,364,567, Cl. 273-237.000.
Tru-Split Tool Company: *See*—
Biesanz, Charles W., Sr., 4,364,213, Cl. 52-309.170.
Truck Repair Service, Inc.: *See*—
Pierce, Ralph E., III, 4,364,638, Cl. 350-289.000.
Truszkowski, Donald T.: *See*—
Weis, Siegfried K.; and Truszkowski, Donald T., 4,364,614, Cl. 30G-187.100.
Trutzschler GmbH & Co. KG: *See*—
Beneke, Wolfgang; Teichmann, Paul; and Schubert, Wolfgang, 4,364,151, Cl. 19-0.200.
Beneke, Wolfgang; Jager, Walter; and Teichmann, Paul, 4,364,153, Cl. 19-107.000.
Rauschen, Rudolf; and Schellen, Ludwig, 4,364,152, Cl. 19-105.000.
TRW Inc.: *See*—
Holcombe, W. Philip, 4,364,159, Cl. 29-156.50R.
Kobylinski, Lee S., 4,364,545, Cl. 254-284.000.
Tsuda, Youichiro, to Pioneer Electronic Corporation. Passive data monitor for use with polling pattern generator in CATV system. 4,365,267, Cl. 358-84.000.
Tsuetaki, George F.: *See*—
Novicky, Nick N., 4,365,074, Cl. 556-442.000.
Tsujii, Kaoru: *See*—
Tokuyama, Mitsuru; Ohki, Kenji; Sagae, Masayuki; and Tsujii, Kaoru, 4,364,985, Cl. 428-149.000.
Tsujita, Kaoru; Tobioka, Sigeki; and Monden, Ikuo, to Sanyo Electric Co., Ltd. Color temperature control circuit. 4,365,265, Cl. 358-29.000.
Tsukada, Toshihisa: *See*—
Koike, Norio; Baji, Toru; Tsukada, Toshihisa; and Yamamoto, Hideaki, 4,364,973, Cl. 427-75.000.
Tsukane, Nagayoshi: *See*—
Takahashi, Shigeyuki; Yamamoto, Shozo; and Tsukane, Nagayoshi, 4,365,002, Cl. 428-483.000.
Tsukanova, Galina M.: *See*—
Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; Shalimov, Alexandr A.; Furmanov, Jury A.; Silchenko, Valery P.; Shalimov, Sergei A.; Khadzhai, Yaroslav I.; Obolentseva, Galina V.; and Vorobiev, Nikolai E., 4,364,393, Cl. 128-335.500.
Tsunekawa, Shinichi: *See*—
Moriwaki, Takeshi; and Tsunekawa, Shinichi, 4,364,617, Cl. 316-24.000.
Tsunoda, Takahiro; Yamaoka, Tsuguo; and Tamaru, Sinji, to Daikin Kogyo Co., Ltd. Fluoroalkyl acrylate copolymer and composition containing the same. 4,365,049, Cl. 526-245.000.
Tsutsumi, Saburo; and Nakagawa, Yasuhiko, to Nissan Motor Company, Limited. Split type internal combustion engine. 4,364,345, Cl. 123-198.00F.
Tsuzuki, Yoshihiko; Hirabayashi, Yuzi; Shirasaki, Shinji; Matsuyama, Masahiro; and Okazaki, Hiroshi, to Nippondenso Co., Ltd. Air-conditioning control apparatus for automotive vehicles. 4,364,513, Cl. 236-49.000.
Tu, Hosheng, to UOP Inc. Passivation of metal contaminants on cracking catalyst with a lithium compound. 4,364,847, Cl. 252-412.000.
Tuchenhagen, Jurgen; Roiner, Franz; and Grosserhode, Josef, to Prof. Dipl.-KFM. Franz Poiner. Method for enzymatically decomposing a low molecular weight material. 4,364,962, Cl. 426-41.000.
Tuchiya, Yoshimasa: *See*—
Katayama, Yoshinori; and Tuchiya, Yoshimasa, 4,364,601, Cl. 296-221.000.
Tuggle, Lloyd H.; Loyd, Ronald C.; and Walker, Lee R., to Emerson Electric Co. Lawn edger. 4,364,435, Cl. 172-15.000.
Tuns, Heinz-Joseph, to SIG - Schweizerische Industrie-Gesellschaft. Manufacture of easily openable foil bag. 4,364,478, Cl. 206-605.000.
Turner, Jerome A.; and Dietel, George W., to Wolverine World Wide, Inc. Running shoe with rear stabilization means. 4,364,188, Cl. 36-31.000.
U.C. Industries: *See*—
Phipps, Arthur L., 4,364,722, Cl. 425-192.00R.
UBE Industries, Ltd.: *See*—
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,365,048, Cl. 526-128.000.
Umemura, Sumio; Ohdan, Kyoji; Sakai, Fumihiko; Suzuki, Kenichi; Bando, Yasuo; Hogami, Toshihiko; and Fuginaga, Masataka, 4,364,844, Cl. 252-435.000.
Uchino, Hiroyoshi: *See*—
Shimizu, Noboru; Yoshida, Hiroshi; Daigo, Hiromiki; Matumoto, Shiyouichi; and Uchino, Hiroyoshi, 4,365,081, Cl. 560-209.000.
Udvardy, Eva: *See*—
Takacs, Kalman; Kiss nee Ajzert, Ilona; Simay, Antal; Literati Nagy, Peter; Hetyey nee Papp, Maria; Ecsery nee Puskas, Marian; Szekeres, Laszlo; Papp, Gyula; Viragh, Sandor; and Udvardy, Eva, 4,365,064, Cl. 546-148.000.
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, to UBE Industries, Ltd. Method for polymerizing α-olefin. 4,365,048, Cl. 526-128.000.
Ueno, Susumu: *See*—
Imada, Kiyoshi; Abe, Tokuji; and Ueno, Susumu, 4,364,970, Cl. 427-40.000.
Uhl, Jack. Paint roller attachment device. 4,364,143, Cl. 15-145.000.
Ujvari, Istvan: *See*—
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Jakab, Jozsef; Kistamas, Attila; and Ujvari, Istvan, 4,364,931, Cl. 424-84.000.
Ulmer, Siegfried W., to International Business Machines Corp. System for controlling the duration of the time interval between blocks of data in a computer-to-computer communication system. 4,365,296, Cl. 364-200.000.
Ulrich, Lawrence W.: *See*—
Luyett, Joe G.; Ulrich, Lawrence W.; and Walker, Connie W., 4,364,219, Cl. 53-374.000.
Umemura, Sumio; Ohdan, Kyoji; Sakai, Fumihiko; Suzuki, Kenichi; Bando, Yasuo; Hogami, Toshihiko; and Fuginaga, Masataka, to Ube Industries, Ltd. Catalyst for production of unsaturated carboxylic acid, preparation thereof and production of unsaturated carboxylic acid. 4,364,844, Cl. 252-435.000.
Underhill, Michael J.: *See*—
Scott, Richard I. H.; and Underhill, Michael J., 4,365,201, Cl. 328-14.000.
Underwood, J. Larry. Fluid-assisted core-release method and apparatus. 4,364,895, Cl. 264-335.000.
Unicover Corporation: *See*—
Helzer, James A., 4,364,537, Cl. 248-448.000.
Union Carbide Corporation: *See*—
Horner, Jerome T.; Anthony, John; and Fraser, William A., 4,364,981, Cl. 428-35.000.
Uniscrew Limited: *See*—
Zimmern, Bernard, 4,364,714, Cl. 417-53.000.
United Kingdom Atomic Energy Authority: *See*—
Dearnaley, Geoffrey; and Watkins, Robert E. J., 4,364,969, Cl. 427-38.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Higton, Malcolm; and Vecht, Aron, 4,365,184, Cl. 313-503.000.
U.S. Industries, Inc.: *See*—
Williams, William R., 4,364,334, Cl. 119-52.0AF.
United States of America
Air Force: *See*—
Grimes, Mark F.; and Reinhart, Theodore J., Jr., 4,365,034, Cl. 524-256.000.
Kilcup, Richard G., 4,365,173, Cl. 307-412.000.
O'Loughlin, James P., 4,365,109, Cl. 174-109.000.
Army: *See*—
Ballato, Arthur; and Vig, John R., 4,365,182, Cl. 310-361.000.
Baumann, Robert P.; Blais, Marcel; and Spiess, Irwin, 4,365,059, Cl. 536-35.000.
Falbel, Gerald, 4,365,149, Cl. 235-404.000.
Pagano, Victor H.; and Hennessey, John M., 4,364,300, Cl. 89-36.00A.
Starkovich, John A., 4,364,775, Cl. 134-3.000.
Energy: *See*—
Arnold, Jones B.; Burleson, Robert R.; and Pardue, Robert M., 4,365,301, Cl. 364-475.000.
Brainard, John P., 4,365,282, Cl. 361-127.000.
Jones, Lynn L., 4,364,182, Cl. 33-174.00H.
Jones, Robert L.; Otey, Milton G.; and Perkins, Roy W., 4,364,906, Cl. 423-19.000.
Kennerly, John M.; Lindner, Gordon M.; and Rowe, John C., 4,364,269, Cl. 73-223.000.
Lazzery, Angelo G.; Crouthamel, Marvin S.; and Coyle, Peter J., 4,364,508, Cl. 228-106.000.
Meyer, Geerd-J.; and Lambrecht, Richard M., 4,364,898, Cl. 376-190.000.
Tokarz, Richard D., 4,365,229, Cl. 338-25.000.
Navy: *See*—
Bard, Allen J.; Fan, Fu-Ren F.; and Reichman, Benjamin, 4,365,010, Cl. 429-111.000.
Green, Eugene L., 4,365,310, Cl. 364-822.000.
Miller, George R., 4,365,232, Cl. 340-27.00R.
Ratliffe, Joseph M., 4,364,170, Cl. 29-724.000.
Ripley-Lotee, Michael J.; Dillinger, Robert B.; and Clark, Keith E., 4,364,530, Cl. 244-3.220.
Young, Charles A., 4,365,159, Cl. 250-385.000.
U.S. Philips Corporation: *See*—
Blanken, Jacob, 4,364,780, Cl. 148-6.000.
Blom, Hendrik, 4,365,271, Cl. 358-219.000.
Heemskerk, Jacobus P. J.; Immink, Kornelis A.; and Simons, Carel A. J., 4,365,323, Cl. 369-44.000.
Lamboo, Theodorus F., 4,365,335, Cl. 372-34.000.
Rehfeldt, Karl H., 4,365,206, Cl. 330-260.000.
Scott, Richard I. H.; and Underhill, Michael J., 4,365,201, Cl. 328-14.000.
Zwanenburg, Dirk J.; Nijssen, Wilhelmus P. M.; and van der Staak, Caspert G. I., 4,364,986, Cl. 428-156.000.
United States Steel Corporation: *See*—
Hetra, Andrew A., Jr.; and Jacob, Charles W., 4,364,468, Cl. 198-489.000.
United Technologies Corporation: *See*—
DeCasperis, Anthony J.; Roethlein, Richard J.; and Breault, Richard D., 4,365,008, Cl. 429-36.000.
Unitika Ltd.: *See*—
Okamoto, Takashi; and Doi, Osamu, 4,365,041, Cl. 525-58.000.

University of Illinois Foundation: *See*—
Holonyak, Nick, Jr., 4,365,260, Cl. 357-17.000.
University of Kentucky Research Foundation, The: *See*—
Yamanis, Jean, 4,365,071, Cl. 549-377.000.
University of Minnesota, The Regents of the: *See*—
Blackshear, Perry L., Jr., 4,364,747, Cl. 55-25.000.
Cheh, Albert M., 4,364,835, Cl. 210-752.000.
University of South Carolina, The: *See*—
Haines, Daniel W., 4,364,990, Cl. 428-218.000.
University of Virginia Alumni Patents Foundation: *See*—
Berne, Robert M.; Belardinelli, Luiz; and Rubio, Rafael, 4,364,922, Cl. 424-9.000.
Unsold, Eberhard; Renner, Gerhard; and Wechsung, Reiner, to Gesellschaft fur Strahlen-und Umweltforschung mbH. Fluid analyzer utilizing a laser beam. 4,365,157, Cl. 250-282.000.
UOP Inc.: *See*—
Carlson, David H. J., 4,364,843, Cl. 252-430.000.
Castillo, Carmen; and Hayes, John C., 4,364,848, Cl. 252-417.000.
DeGraff, Richard R.; and Peters, Kenneth D., 4,364,820, Cl. 208-101.000.
Gerhold, Clarence G., 4,364,356, Cl. 123-440.000.
Hutchings, Leroi E.; and Conner, Algie J., 4,364,819, Cl. 208-96.000.
O'Brien, Dennis E., 4,364,821, Cl. 208-325.000.
Tu, Hosheng, 4,364,847, Cl. 252-412.000.
Vickers, Anthony G.; and Lomas, David A., 4,364,849, Cl. 252-417.000.
Upjohn Company, The: *See*—
Morton, Douglas R., Jr., 4,365,075, Cl. 560-51.000.
Usami, Katsuhisa: *See*—
Mukai, Kiichiro; Harada, Seiki; Muramatsu, Shin-ichi; Hiraiwa, Atsushi; Takahashi, Shigeru; Usami, Katsuhisa; Iwata, Seiichi; Ito, Satoru; and Yoshimi, Takeo, 4,365,264, Cl. 357-54.000.
USM Corporation: *See*—
Bainton, Herbert W., 4,364,158, Cl. 29-116.0AD.
USV Pharmaceutical Corporation: *See*—
Neiss, Edward S.; and Loev, Bernard, 4,364,940, Cl. 424-230.000.
Utility Products, Inc.: *See*—
Wright, Allen C., 4,364,451, Cl. 182-213.000.
Vagin, Viktor V.: *See*—
Gorbatov, Vasily M.; Spirin, Evgeny T.; Shakhov, Vladimir V.; Vagin, Viktor V.; Khromov, Vyacheslav I.; Bogushev, Zimel A.; Eremin, Viktor I.; Vainzof, Kaletta M.; and Podkhvatilin, Evgeny R., 4,364,309, Cl. 99-352.000.
Vainzof, Kaletta M.: *See*—
Gorbatov, Vasily M.; Spirin, Evgeny T.; Shakhov, Vladimir V.; Vagin, Viktor V.; Khromov, Vyacheslav I.; Bogushev, Zimel A.; Eremin, Viktor I.; Vainzof, Kaletta M.; and Podkhvatilin, Evgeny R., 4,364,309, Cl. 99-352.000.
Valentine, John B. Leg exerciser. 4,364,559, Cl. 272-142.000.
Valesko, Thomas M. Plastic bag stand. 4,364,534, Cl. 248-97.000.
Vallourec: *See*—
Douchy, Michel; Tranchant, Jean-Louis; and Jehan, Michel, 4,364,770, Cl. 75-53.000.
Vambutas, Edmundas; and Feltham, John. Memory controlled electromagnetic passive controllers. 4,364,244, Cl. 66-75.200.
Van Den Hul, Aalt-Jouk. Stylus for tracking a stereophonic or quadraphonic sound groove. 4,365,325, Cl. 369-173.000.
van der Lely, Cornelis. Ploughs. 4,364,436, Cl. 172-33.000.
van der Staak, Caspert G. I.: *See*—
Zwanenburg, Dirk J.; Nijssen, Wilhelmus P. M.; and van der Staak, Caspert G. I., 4,364,986, Cl. 428-156.000.
van der Stegen, Gerrit H. D., to D.E.J. International Research Company B.V. Process of the decaffeination of green coffee beans. 4,364,964, Cl. 426-422.000.
van der Stegen, Gerrit H. D.; and de Wilt, Hendricus G. J., to D.E.J. International Research Company B.V. Process for extracting caffeine from solutions thereof in carbon dioxide under high pressure. 4,364,965, Cl. 426-481.000.
van Duijn, Jan: *See*—
Beun, Jacobus H.; and van Duijn, Jan, 4,364,718, Cl. 417-500.000.
Vanlautem, Noel; and Gilain, Jacques, to Solvay & Cie. Process for the manufacture of β-hydroxybutyric acid and its oligocondensates. 4,365,088, Cl. 562-579.000.
van Roon, Johannes. Liftable steering house or control cabin. 4,364,322, Cl. 114-71.000.
Van Wersch, Kurt; and Pabst, Manfred, to Monforts, A. Method and apparatus for continuous application of foam to a planar textile structure. 4,364,784, Cl. 156-78.000.
Varkonyi nee Schlavicsko, Erika: *See*—
Seres, Jeno; Varkonyi nee Schlavicsko, Erika; Virag, Sandor; and Kulcsar, Gabor, 4,364,958, Cl. 424-274.000.
Varukha, Nikolai A.: *See*—
Tarasov, Nikolai M.; Varukha, Nikolai A.; Brontman, Rostislav L.; Slesarev, Boris A.; Zhukov, Anatoly M.; Mizik, Valery V.; Rogachev, Evgeny P.; and Gurnov, Nikolai I., 4,365,137, Cl. 219-137.310.
Vascor, Inc.: *See*—
Rosen, Jonathan J.; Acosta, George M.; and Bowman, Christopher J., 4,364,126, Cl. 3-1.500.
Vcelka, John L. I.V. Flashback indication. 4,364,383, Cl. 128-214.00R.
VDO Adolf Schindling AG: *See*—
Bleuel, Walter, 4,364,673, Cl. 368-316.000.
Vecht, Aron: *See*—
Higton, Malcolm; and Vecht, Aron, 4,365,184, Cl. 313-503.000.
Vedova, Ferruccio D., to CEDA S.p.A. Level measurement device. 4,365,165, Cl. 250-577.000.
Veeder Root Industries, Inc.: *See*—
Lombardo, Phillip J.; and Smilgys, Bruno S., 4,365,147, Cl. 235-131.00R.
Smilgys, Bruno S., 4,365,146, Cl. 235-131.00R.
Veit, Richard E.: *See*—
Griswold, David E.; and Veit, Richard E., 4,364,408, Cl. 137-107.000.
Velasco, Gonzalo: *See*—
Croset, Michel; and Velasco, Gonzalo, 4,364,226, Cl. 60-276.000.
Vepy, Tamas A., to Picker International, Inc. X-Ray film changer for the serial radiography. 4,365,342, Cl. 378-173.000.
Verber, Carl M.; and Kenan, Richard P., to Battelle Memorial Institute. Pairwise comparison device. 4,364,633, Cl. 350-96.140.
Veronneau, Marcel; and Marino, Thomas. Waste metal conversion process and products. 4,364,773, Cl. 106-281.00R.
Vesterlund, Gunnar, to AB Asea-Atom. Method of treating zirconium-based alloy tubes. 4,364,781, Cl. 148-6.300.
Vicini, Antonio: *See*—
Sassi, Carlo; and Vicini, Antonio, 4,364,398, Cl. 128-736.000.
Vickers, Anthony G.; and Lomas, David A., to UOP Inc. Fluid catalyst regeneration process and apparatus. 4,364,849, Cl. 252-417.000.
Vickers Limited: *See*—
Stevenson, William D., 4,364,323, Cl. 114-265.000.
Victor Company of Japan, Ltd.: *See*—
Kinjo, Hisao, 4,365,279, Cl. 360-109.000.
Namiki, Yasuomi, 4,365,277, Cl. 360-72.100.
Viertel, Lothar; and Kaiser, Klaus-Peter, to Gebr. Happich GmbH. Sun visor for vehicles including a mirror. 4,364,597, Cl. 296-97.00H.
Viertel, Lothar, to Gebr. Happich GmbH. Swivel bearing and reinforcement for sun visor. 4,364,598, Cl. 296-97.00K.
Vig, John R.: *See*—
Ballato, Arthur; and Vig, John R., 4,365,182, Cl. 310-361.000.
Vignon, Louis, to Heberlein Hispano SA. Process for producing a combination yarn. 4,364,223, Cl. 57-5.000.
Viguie, Jean-Claude: *See*—
Bernard, Herve; and Viguie, Jean-Claude, 4,365,011, Cl. 429-193.000.
Villa, Jose' L., to Diamond Shamrock Corporation. Oil slurries of carbonaceous materials. 4,364,741, Cl. 44-51.000.
Villa, Jose' L.: *See*—
Knitter, Kathy A.; and Villa, Jose' L., 4,364,742, Cl. 44-51.000.
Villiger, Alois: *See*—
Boller, Arthur; Germann, Alfred; Schadt, Martin; and Villiger, Alois, 4,364,838, Cl. 252-299.610.
Virag, Sandor: *See*—
Seres, Jeno; Varkonyi nee Schlavicsko, Erika; Virag, Sandor; and Kulcsar, Gabor, 4,364,958, Cl. 424-274.000.
Viragh, Sandor: *See*—
Takacs, Kalman; Kiss nee Ajzert, Ilona; Simay, Antal; Literati Nagy, Peter; Hetyey nee Papp, Maria; Ecsery nee Puskas, Marian; Szekeres, Laszlo; Papp, Gyula; Viragh, Sandor; and Udvardy, Eva, 4,365,064, Cl. 546-148.000.
Virginia Chemicals Inc.: *See*—
Clarke, John P.; and Schumacher, Ernest W., 4,364,756, Cl. 55-316.000.
Vironneau, Pierre: *See*—
Chapelle, Jules A.; Levacher, Jean-Pierre; Sanzey, Emile; and Vironneau, Pierre, 4,364,239, Cl. 62-235.100.
Vischer, Peter: *See*—
Skuballa, Werner; Vorbrueggen, Helmut; Loge, Olaf; Vischer, Peter; and Raduchel, Bernd, 4,364,951, Cl. 424-263.000.
Visco, John. Portable blind. 4,364,193, Cl. 43-1.000.
Vizmuller, Peter, to Motorola Canada Limited. Helical resonator filter with dielectric apertures. 4,365,221, Cl. 333-202.000.
Vladimirovich, Vrublevsky E.: *See*—
Prokofievna, Skripchik L.; Moiseevich, Shutov G.; Emmanuilovna, Erdman M.; Eduardovich, Pukhalsky M.; Ivanovich, Lezhen V.; Ignatievich, Shevchenko A.; and Vladimirovich, Vrublevsky E., 4,364,976, Cl. 427-382.000.
Voegeli, Marcel: *See*—
Gut, Karl; Voegeli, Marcel; and Schneider, Haiko, 4,364,879, Cl. 264-22.000.
Vogel, Roger F.: *See*—
Marcelin, George; Vogel, Roger F.; and Swift, Harold E., 4,365,095, Cl. 568-462.000.
Volkswagenwerk AG: *See*—
Schulz, Siegfried; Stroppel, Karl-Gunter; and Meckel, Bernd, 4,364,240, Cl. 62-476.000.
Volkswagenwerk Aktiengesellschaft: *See*—
Fiala, Ernst, 4,364,353, Cl. 123-425.000.
von Bose, Robert J., to WPC, Inc. Sonic logging tool. 4,365,321, Cl. 367-25.000.
von Ropenack, Adolf; Stock, Gunter; and Heubner, Ulrich, to Ruhr Zink GmbH. Method of electrolytically recovering zinc. 4,364,807, Cl. 204-114.000.
von Wichert, Nils: *See*—
Komossa, Werner; and von Wichert, Nils, 4,364,549, Cl. 271-1.000.
Vorbrueggen, Helmut: *See*—
Skuballa, Werner; Vorbrueggen, Helmut; Loge, Olaf; Vischer, Peter; and Raduchel, Bernd, 4,364,951, Cl. 424-263.000.
Vorbruggen, Helmut: *See*—
Skuballa, Werner; Vorbruggen, Helmut; Raduchel, Bernd; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,364,950, Cl. 424-263.000.

Vorobiev, Nikolai E.: *See*—
Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; Shalimov, Alexandr A.; Furmanov, Jury A.; Silchenko, Valery P.; Shalimov, Sergei A.; Khadzhai, Yaroslav I.; Obolentseva, Galina V.; and Vorobiev, Nikolai E., 4,364,393, Cl. 128-335.500.

VSI Corporation: *See*—
Jacobellis, A. A.; and Zahid, Abduz, 4,364,416, Cl. 138-30.000.

W-K-M Wellhead Systems, Inc.: *See*—
Peters, Clifford M., 4,364,412, Cl. 137-557.000.

W. R. Grace & Co.: *See*—
Hill, Richard N., 4,364,912, Cl. 423-321.00R.
Murch, Robert M.; and Wood, Louis L., 4,365,025, Cl. 521-159.000.

W. R. Meadows, Inc.: *See*—
Cork, Dale J.; and Pellman, Russell, deceased, 4,364,975, Cl. 427-294.000.

WABCO Westinghouse, S.A.: *See*—
Dalibout, Georges; and Grenier, Michel, 4,364,305, Cl. 92-63.000.

Wacker-Chemie GmbH: *See*—
Eck, Herbert; and Singer, Robert, 4,365,040, Cl. 524-819.000.

Wada, Masaru: *See*—
Sugino, Takashi; Shimizu, Hirokazu; Wada, Masaru; and Itoh, Kunio, 4,365,336, Cl. 372-45.000.

Wada, Shohachi: *See*—
Mitra, Gautam; Coan, Michael H.; and Wada, Shohachi, 4,364,861, Cl. 260-112.00B.

Wada, Tomio: *See*—
Yasuda, Shuhei; Ishii, Yutaka; and Wada, Tomio, 4,365,242, Cl. 340-709.000.

Wagner, Kuno: *See*—
Muller, Hanns P.; Wagner, Kuno; Blahak, Johannes; and Menk, Hermann, 4,365,000, Cl. 428-423.900.

Wagner, Norbert, to Linde AG. Apparatus for the adsorptive cleaning of gases. 4,364,753, Cl. 55-179.000.

Waitman, Reuben H.; and Frank, Bettie M., to General Foods Corporation. Process for preparing a dried grape product. 4,364,968, Cl. 426-639.000.

Wajs, Helene: *See*—
Wajs, Michel; and Wajs, Helene, 4,364,785, Cl. 156-88.000.

Wajs, Michel; and Wajs, Helene. Association of a piece of fabric with a sheet of PVC. 4,364,785, Cl. 156-88.000.

Waker, Jerome A.: *See*—
Rhoades, Edward J.; Rosenberger, Edwin C.; and Waker, Jerome A., 4,364,516, Cl. 239-74.000.

Waldemar Link GmbH & Co.: *See*—
Keller, Arnold, 4,364,389, Cl. 128-303.00R.

Waldhauser, Steven J. A.; and Masbruch, Richard D., to Wetrok, Inc. Automatic floor cleaning machine with removable drive carriage. 4,364,138, Cl. 15-50.00R.

Waldmeier, Othmar E., to Elas Trust Reg. Package for diamonds and other precious stones. 4,364,472, Cl. 206-45.340.

Walker, Alice R. Garment stretcher. 4,364,495, Cl. 223-61.000.

Walker, Connie W.: *See*—
Luyett, Joe G.; Ulrich, Lawrence W.; and Walker, Connie W., 4,364,219, Cl. 53-374.000.

Walker, Lee R.: *See*—
Tuggle, Lloyd H.; Loyd, Ronald C.; and Walker, Lee R., 4,364,435, Cl. 172-15.000.

Walker Scientific, Inc.: *See*—
Smith, Frederic W., 4,364,377, Cl. 128-1.500.

Wallace, Robert S.: *See*—
Dewolf, Lowell E.; Scrudato, James J.; and Wallace, Robert S., 4,365,246, Cl. 340-802.000.

Walter, Arthur, to Erwin Sick GmbH Optik-Elektronik. Circuit arrangement for monitoring and controlling closing and opening movements. 4,365,188, Cl. 318-282.000.

Walter, Gunter: *See*—
Mass, Manfred; and Walter, Gunter, 4,364,980, Cl. 428-35.000.

Walter, Karl-Heinz: *See*—
Kruger, Hans; and Walter, Karl-Heinz, 4,364,640, Cl. 350-345.000.

Walter, Manfred: *See*—
Leins, Eberahrd; Walter, Manfred; and Gaiser, Willi, 4,364,245, Cl. 66-78.000.
Leins, Eberhard; Walter, Manfred; and Gaiser, Willi, 4,364,246, Cl. 66-145.00R.

Walton, Russell C. Machine control device. 4,365,122, Cl. 200-61.420.

Wangner Systems Corporation: *See*—
Martin, William R., 4,364,421, Cl. 139-383.00A.

Warabi, Junichi: *See*—
Sakuma, Shinzo; and Warabi, Junichi, 4,365,127, Cl. 200-144.00B.

Ward, Raymond E. Filter apparatus. 4,364,828, Cl. 210-232.000.

Warncke, Ernst; and Pasternack, Adalbert, to Dragerwerk Aktiengesellschaft. Excess pressure respirator with pressurized breathing gas shutoff. 4,364,384, Cl. 128-204.280.

Warner, Gary J., to Boeing Company, The. Strut release mechanism for hydrofoil craft. 4,364,324, Cl. 114-280.000.

Warner-Lambert Company: *See*—
Pattison, Ian C., 4,364,954, Cl. 424-267.000.

Wasson, Daniel A.: *See*—
Funk, Albert G.; Wasson, Daniel A.; and Ikeda, Joe N., 4,364,782, Cl. 149-21.000.

Waters, Michael A., to Application Engineering Corporation. Mold atmosphere control system. 4,364,893, Cl. 264-325.000.

Watkins, Robert E. J.: *See*—
Dearnaley, Geoffrey; and Watkins, Robert E. J., 4,364,969, Cl. 427-38.000.

Watson, Howard E., to Whirlpool Corporation. Pyrolytic latch assembly heat cover for ranges. 4,364,589, Cl. 292-113.000.

Wattenhofer, Jean-Pierre: *See*—
Thoenig, Marcel; and Wattenhofer, Jean-Pierre, 4,364,669, Cl. 368-111.000.

Wawro, Walter G., to Envirotech Corporation. Sedimentation apparatus having an improved skimming mechanism. 4,364,834, Cl. 210-525.000.

Weber, Andrew M.: *See*—
Bremer, Noel J.; Dria, Dennis E.; and Weber, Andrew M., 4,365,069, Cl. 549-260.000.

Weber, Edward V.: *See*—
Davis, Donald E.; Moore, Richard D.; Ryan, Philip M.; and Weber, Edward V., 4,365,163, Cl. 250-491.100.

Weber, Edwin J., Sr. Piston pump actuated diaphragm pump for spraying liquids. 4,364,520, Cl. 239-330.000.

Wechsung, Reiner: *See*—
Unsold, Eberhard; Renner, Gerhard; and Wechsung, Reiner, 4,365,157, Cl. 250-282.000.

Wei, Lun-Yan, to Du Pont de Nemours, E. I., and Company. Spunlike yarns. 4,364,998, Cl. 428-399.000.

Weil, Thomas A., to Standard Oil Company (Indiana). Plant hydrocarbon recovery process. 4,364,745, Cl. 48-209.000.

Weimer, Gunther; and Becker, Henning, to Centra-Burkle GmbH & Co. Switchover system for binary load control. 4,365,167, Cl. 307-66.000.

Weinstein, Marvin J.: *See*—
Leibowitz, Paul; and Weinstein, Marvin J., 4,364,863, Cl. 260-112.00R.

Weis, Siegfried K.; and Truszkowski, Donald T., to C. L. Frost & Son, Inc. Removal method for removable closure member for bearing units. 4,364,614, Cl. 308-187.100.

Weiss, Richard V., to Jerdon Industries, Inc. Hair dryer. 4,365,141, Cl. 219-370.000.

Weitz, Eric: *See*—
Marks, Tobin J.; Cuellar, Edward A.; Miller, Steven S.; and Weitz, Eric, 4,364,870, Cl. 260-429.100.

Weldon, Clark P.; Wolfson, Stephen L.; and Miller, Marvin L., to Harco Corporation. Method and apparatus for electrical surveys of offshore metal structures with correction for distance. 4,365,191, Cl. 324-71.00R.

Weller, Kenneth G.; and Ostrum, James V., to Shamrock Industries, Inc. Plastic lid with stacking separation means. 4,364,476, Cl. 206-508.000.

Wentworth, Irvin, to Bison-Werke, Bahre & Greten GmbH & Co., KG. Surfaced oriented strand board. 4,364,984, Cl. 428-106.000.

West Electric Co., Ltd.: *See*—
Iwata, Hiroshi; and Hasegawa, Wataru, 4,364,652, Cl. 354-197.000.

Westerberg, Max M.: *See*—
Kazlauskas, Gasparas; Jusionis, Vytautas J.; Westerberg, Max M.; and Meacham, John W., 4,365,132, Cl. 219-60.00A.

Western Electric Company, Inc.: *See*—
Bloodworth, Lonnie B., Jr.; Scholly, Christian; and Williford, Thomas L., Jr., 4,364,788, Cl. 156-179.000.
MacDonald, John B.; Patberg, John K.; and Raamot, Jaan, 4,365,305, Cl. 364-521.000.

Westinghouse Brake & Signal Co.: *See*—
Wickham, David J., 4,364,609, Cl. 303-23.00R.

Westinghouse Brake and Signal Company, Limited: *See*—
Williams, Eric F., 4,364,610, Cl. 303-36.000.

Westinghouse Electric Corp.: *See*—
Bluzer, Nathan; Jensen, Arthur S.; Schroder, Dieter K.; and Malmberg, Paul R., 4,364,164, Cl. 29-571.000.
Elms, Robert T., 4,365,302, Cl. 364-483.000.
Halstead, Kenneth G.; Benbow, Eugene C.; and Coyle, Forrest E., 4,365,194, Cl. 324-116.000.
Lee, Ronald L., 4,365,211, Cl. 331-11.000.
Miller, Robert C., 4,365,251, Cl. 340-870.020.
Nathenson, Richard D.; Pipich, Charles W.; and Kopnitsky, Joseph R., deceased, 4,365,176, Cl. 310-54.000.
Schroder, Dieter K., 4,365,259, Cl. 357-30.000.

Weston, Allen H. Random pulse detector system. 4,365,169, Cl. 307-141.400.

Wetrok, Inc.: *See*—
Waldhauser, Steven J. A.; and Masbruch, Richard D., 4,364,138, Cl. 15-50.00R.

Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, to Dr. Karl Thomae Gesellschaft mit beschrankter Haftung. Cephalosporins. 4,364,944, Cl. 424-246.000.

Weyerhaeuser Company: *See*—
Chi, Uli H.; and Lembersky, Mark R., 4,364,732, Cl. 434-219.000.

Whirlpool Corporation: *See*—
Watson, Howard E., 4,364,589, Cl. 292-113.000.

Whitaker, Jerome P.: *See*—
Rankin, William J.; and Whitaker, Jerome P., 4,365,192, Cl. 324-72.000.

White, Allen A. Tub chopper. 4,364,526, Cl. 241-186.400.

White, Ben E.: *See*—
Geyer, Charles J., Jr.; and White, Ben E., 4,364,889, Cl. 264-188.000.

White, John M.; and Owen, George, Jr. Baseball rebound target. 4,364,562, Cl. 273-26.00A.

White, Preston S., to PPG Industries, Inc. Solid polymer electrolyte cell and electrode for same. 4,364,813, Cl. 204-252.000.

White, Roger P., to North American Philips Corporation. Electrophoretic elapsed time indicator. 4,364,670, Cl. 368-114.000.

Whitfield, James, Jr.: *See—*
Sullivan, Timothy A.; and Whitfield, James, Jr., 4,364,762, Cl. 65-2.000.

Whitney, John A., to Franklin Electric Co., Inc. Data processing system. 4,365,148, Cl. 235-383.000.

Whittle, Barry J. Nasal composition for relieving nasal distress. 4,364,945, Cl. 424-247.000.

Wickham, David J., to Westinghouse Brake & Signal Co. Empty/load brake control valve apparatus. 4,364,609, Cl. 303-23.00R.

Widrow, Bernard. Apparatus and method for determining the position of a gas-saturated porous rock in the vicinity of a deep borehole in the earth. 4,365,322, Cl. 367-32.000.

Wierenga, Steven W.: *See—*
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,365,295, Cl. 364-200.000.

Wikstrom, Sigvard: *See—*
Oja, Viktor; and Wikstrom, Sigvard, 4,364,676, Cl. 374-44.000.

Wildonger, Richard A.: *See—*
Heald, Anthony F.; and Wildonger, Richard A., 4,364,948, Cl. 424-256.000.

Wilkinson, Lawrence H. Combined sump drainage and irrigation device. 4,364,394, Cl. 604-96.000.

Willett, Howard P.; and Bakké, Even, to Peabody Process Systems, Inc. Integrated flue gas processing method. 4,364,910, Cl. 423-242.000.

Willhelm, Jorg; Jacoby, Hans-Dieter; Schuster, Erich; and Prinz, Dieter, to Ernst Leitz Wetzlar GmbH. Instrumentation for sensing the test values at test samples. 4,364,180, Cl. 33-174.00L.

William H. Rorer, Inc.: *See—*
Diamond, Julius, 4,365,093, Cl. 564-307.000.

Williams, Dennis L.: *See—*
Crutchfield, E. Bryant; Wright, Richard F.; Adair, Paul C.; Harris, Seth O.; Shackle, Dale R.; and Williams, Dennis L., 4,365,018, Cl. 430-139.000.

Williams, Eric F., to Westinghouse Brake and Signal Company, Limited. Railway vehicle braking systems. 4,364,610, Cl. 303-36.000.

Williams, James F. Engine analyzer apparatus. 4,364,266, Cl. 73-115.000.

Williams, Robert A. Adapter assembly for electrical leads. 4,364,624, Cl. 339-154.00R.

Williams, William R., to U.S. Industries, Inc. Low profile multi-tier, automated, poultry cage feeder system. 4,364,334, Cl. 119-52.0AF.

Williford, Thomas L., Jr.: *See—*
Bloodworth, Lonnie B., Jr.; Scholly, Christian; and Williford, Thomas L., Jr., 4,364,788, Cl. 156-179.000.

Willmar Schwabe, Firma: *See—*
Klessing, Klaus; and Chatterjee, Shyam S., 4,364,953, Cl. 424-266.000.

Wilson, David A.: *See—*
Svatek, Katherine H.; Wilson, David A.; and Griffin, Freddie, Jr., 4,364,871, Cl. 260-439.00R.

Wilson, David S.: *See—*
Mulholland, Wayne A.; Martin, Robert J.; Wilson, David S.; and Esparza, Carlos, Jr., 4,364,620, Cl. 339-17.0CF.

Wilson, Lionel A., to Xerox Corporation. Sheet stacking apparatus. 4,364,553, Cl. 271-219.000.

Wilson, Pryce. Multi-walled structures for controlled environmental use. 4,364,208, Cl. 52-82.000.

Winchell, Harry S., to Medi-Physics, Inc. Stable diagnostic reagents. 4,364,920, Cl. 424-1.000.

Winnale, James A.: *See—*
Rogers, Lloyd W., Jr.; and Winnale, James A., 4,364,584, Cl. 280-802.000.

Winter, Max, deceased; and by Mottu, Pierre, executor, to Firmenich SA. Heterocyclic derivatives as flavoring agents. 4,364,400, Cl. 131-277.000.

Wirt, Leslie S., to Lockheed Corporation. Surface wave attenuation apparatus. 4,364,691, Cl. 405-26.000.

Wisconsin Alumni Research Foundation: *See—*
Strother, Charles M.; and Kudva, Balakrishna V., 4,364,392, Cl. 128-325.000.

Wise, Robert J., to Georgia-Pacific Corporation. Sheet transfer apparatus. 4,364,555, Cl. 271-308.000.

Wisman, Craig B.: *See—*
Pierce, William S.; Wisman, Craig B.; and Donachy, James H., 4,364,127, Cl. 3-1.500.

Wissmann, Michael; and Stiefel, Peter, to Robert Bosch GmbH. Metering and distribution valve assembly. 4,364,362, Cl. 123-454.000.

Witt, August F.; and Raman, Ramaswamy V., to Massachusetts Institute of Technology. Method of forming a laminated ribbon structure and a ribbon structure formed thereby. 4,365,005, Cl. 428-611.000.

Wittern, Hans-Dieter; and Geyer, Fred, to Naturin-Werk Becker & Co. Closure tie for tubes of film material for enclosing food, a method of forming the tie and apparatus for carrying out this method. 4,364,511, Cl. 229-63.000.

Wix Corporation: *See—*
Connor, Augustus S., Jr., 4,364,825, Cl. 210-109.000.

Wixom, Marvin J. Lawn mower. 4,364,221, Cl. 56-13.600.

Woitun, Eberhard: *See—*
Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, 4,364,944, Cl. 424-246.000.

Wolfson, Stephen L.: *See—*
Weldon, Clark P.; Wolfson, Stephen L.; and Miller, Marvin L., 4,365,191, Cl. 324-71.00R.

Wollam, Carl A.: *See—*
Gailey, J. Lynn; and Wollam, Carl A., 4,364,215, Cl. 52-488.000.

Wolverine World Wide, Inc.: *See—*
Turner, Jerome A.; and Dietel, George W., 4,364,188, Cl. 36-31.000.

Wood, Louis L.: *See—*
Murch, Robert M.; and Wood, Louis L., 4,365,025, Cl. 521-159.000.

Woodle, Robert A.; and Gillespie, Ronald G., to Texaco, Inc. Characterization factor monitor. 4,364,262, Cl. 73-53.000.

Woodward, Robert B.: *See—*
Ernest, Ivan; Gosteli, Jacques; and Woodward, Robert B., 4,364,865, Cl. 260-239.00A.

Woolard, Joseph H. Hand held ball throwing implement. 4,364,371, Cl. 124-5.000.

Wossner, Felix; and Handke, Gunther, to Fichtel & Sachs A.G. Piston-cylinder unit particularly for shock absorber or compression strut. 4,364,457, Cl. 188-322.170.

Wozniak, Glenn A.; Rady, Robert R.; and Pate, Harold T., to Indian Head Inc. Floor or bench mounted conduit cutting device. 4,364,292, Cl. 83-605.000.

WPC, Inc.: *See—*
von Bose, Robert J., 4,365,321, Cl. 367-25.000.

Wright, Allen C., to Utility Products, Inc. Ladder lock. 4,364,451, Cl. 182-213.000.

Wright, Charles H.: *See—*
Anderson, Raymond P.; Schmalzer, David K.; and Wright, Charles H., 4,364,817, Cl. 208-8.0LE.

Wright, Richard F.: *See—*
Crutchfield, E. Bryant; Wright, Richard F.; Adair, Paul C.; Harris, Seth O.; Shackle, Dale R.; and Williams, Dennis L., 4,365,018, Cl. 430-139.000.

Wunsch, Adolf. Driving mechanism for tool slides of punching and bending machines. 4,364,281, Cl. 74-55.000.

Wybauw, Jacques. Prefabricated building units for constructing building, and buildings whose fabric comprises assembled units of this kind. 4,364,206, Cl. 52-79.700.

Wyler, Siegfried: *See—*
Lohmann, Dieter; and Wyler, Siegfried, 4,364,808, Cl. 204-158.00R.

Xeda International S.A.: *See—*
Sardo, Alberto, 4,364,479, Cl. 209-668.000.

Xerox Corporation: *See—*
Hynes, Frank R., 4,364,550, Cl. 271-11.000.
Wilson, Lionel A., 4,364,553, Cl. 271-219.000.

XRE Corporation: *See—*
Grady, John K.; Rice, David B.; and Rice, Paul G., 4,365,343, Cl. 378-181.000.

Yamada, Koichi; Harato, Takuo; Kato, Hisakatsu; and Shiozaki, Yasumi, to Sumitomo Aluminium Smelting Company, Limited. Process for producing coarse grains of aluminum hydroxide. 4,364,919, Cl. 423-629.000.

Yamada, Koki: *See—*
Kunimatsu, Yoshio; Okumura, Hajime; Masai, Hiroshi; Yamada, Koki; and Yamada, Mikio, 4,364,960, Cl. 426-17.000.

Yamada, Mikio: *See—*
Kunimatsu, Yoshio; Okumura, Hajime; Masai, Hiroshi; Yamada, Koki; and Yamada, Mikio, 4,364,960, Cl. 426-17.000.

Yamada, Mitsuhiko; and Nakade, Toshiaki, to Dainippon Screen Seizo Kabushiki Kaisha. Picture data compressing method. 4,365,273, Cl. 358-260.000.

Yamada, Tateo: *See—*
Mamiya, Toshiharu; Yamada, Tateo; Hirohata, Michio; Ogawa, Yukio; and Kimura, Hiroyuki, 4,364,649, Cl. 354-25.000.

Yamada, Yasuharu: *See—*
Shiga, Akinobu; Fukui, Yoshiharu; Sasaki, Toshio; Okawa, Masahisa; Matsu-Ura, Hideaki; and Yamada, Yasuharu, 4,364,851, Cl. 252-429.00B.

Yamada, Yu: *See—*
Seto, Susumu; Tokuhara, Mitsuhiro; Takemura, Yukio; Yamada, Yu; and Kuwayama, Takeshi, 4,364,658, Cl. 355-8.000.

Yamagichi, Takashi: *See—*
Kanai, Tamaki; Yamagichi, Takashi; Yoshikawa, Hirofumi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,364,885, Cl. 264-134.000.

Yamaguchi, Masahiko: *See—*
Motohashi, Katsuichi; Obara, Toshio; Kaneko, Kazuo; and Yamaguchi, Masahiko, 4,364,999, Cl. 428-411.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Ikuma, Katsumi, 4,364,448, Cl. 180-206.000.
Kimura, Hiroshi, 4,364,340, Cl. 123-55.00R.
Shiohara, Masakazu, 4,364,346, Cl. 123-323.000.
Yoshida, Keisuke, 4,364,447, Cl. 180-182.000.

Yamamoto, Hideaki: *See—*
Koike, Norio; Baji, Toru; Tsukada, Toshihisa; and Yamamoto, Hideaki, 4,364,973, Cl. 427-75.000.

Yamamoto, Shozo: *See—*
Takahashi, Shigeyuki; Yamamoto, Shozo; and Tsukane, Nagayoshi, 4,365,002, Cl. 428-483.000.

Yamamoto, Takashi, to Murata Manufacturing Co., Ltd. Piezoelectric vibrator with damping electrodes. 4,365,181, Cl. 310-320.000.

Yamamoto, Takeshi: *See—*
Yokogawa, Kanae; Yamamoto, Takeshi; Takase, Yoshiyuki; Katae, Hiromi; and Kawata, Shigeo, 4,364,926, Cl. 424-50.000.

Yamamoto, Teiji; and Yamazaki, Tsukasa, to Kabushiki Kaisha Komatsu Seisakusho. Seal assembly with load ring. 4,364,572, Cl. 277-92.000.

Yamamoto, Yasunobu; Sakabe, Toshiaki; and Hamada, Eizi, to Aisin Seiki Kabushiki Kaisha; and Aisin Kako Kabushiki Kaisha. Clutch facing material and method for manufacturing the same. 4,364,997, Cl. 428-372.000.

Yamanaka, Tsutomu; Sano, Mitsuharu; and Yasuda, Hiroshi, to Yoshitomi Pharmaceutical Industries Ltd. 2(4-n-Hexadecyl amino or oxy phenyl) 5 ethoxy oxazoleacetic acid derivatives. 4,365,066, Cl. 548-228.000.

Yamanis, Jean, to University of Kentucky Research Foundation, The. Production of anhydrous 1,4-dioxane. 4,365,071, Cl. 549-377.000.

Yamaoka, Tsuguo: *See*—
Tsunoda, Takahiro; Yamaoka, Tsuguo; and Tamaru, Sinji, 4,365,049, Cl. 526-245.000.

Yamauchi, Satoshi, to Ricoh Co., Ltd. Impedance transducer. 4,365,209, Cl. 330-308.000.

Yamauchi, Yutaka, to Sharp Kabushiki Kaisha. Amorphous film solar cell. 4,365,107, Cl. 136-258.000.

Yamazaki, Takeo: *See*—
Tani, Akira; and Yamazaki, Takeo, 4,364,284, Cl. 74-540.000.

Yamazaki, Tsukasa: *See*—
Yamamoto, Teiji; and Yamazaki, Tsukasa, 4,364,572, Cl. 277-92.000.

Yanagawa, Nobuyuki, to Ricoh Company, Ltd. Electrophotographic copying machine. 4,364,656, Cl. 355-3.0CH.

Yanagihara, Hideo, to NSK-Warner K.K. Retractor for seat belt provided with buffer means against webbing taking up force. 4,364,528, Cl. 242-107.700.

Yano, Takefumi: *See*—
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,365,048, Cl. 526-128.000.

Yano, Teruo: *See*—
Higuchi, Noboru; Yano, Teruo; and Ohnishi, Masahiro, 4,364,760, Cl. 55-523.000.

Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; Shalimov, Alexandr A.; Furmanov, Jury A.; Silchenko, Valery P.; Shalimov, Sergei A.; Khadzhai, Yaroslav I.; Obolentseva, Galina V.; and Vorobiev, Nikolai E. Absorbable surgical suture material based on monocarboxycellulose and method for producing the same. 4,364,393, Cl. 128-335.500.

Yasuda, Hiroshi: *See*—
Yamanaka, Tsutomu; Sano, Mitsuharu; and Yasuda, Hiroshi, 4,365,066, Cl. 548-228.000.

Yasuda, Shuhei; Ishii, Yutaka; and Wada, Tomio, to Sharp Kabushiki Kaisha. Driving technique for matrix liquid crystal display panel for displaying characters and a cursor. 4,365,242, Cl. 340-709.000.

Yeda Research & Development Co., Ltd.: *See*—
Ruhman, Smil; and Orbach, Zvi, 4,365,304, Cl. 364-515.000.

Yhap, Ernesto F.: *See*—
Greanias, Evon C.; and Yhap, Ernesto F., 4,365,235, Cl. 340-146.3AC.

Yokogawa, Kanae; Yamamoto, Takeshi; Takase, Yoshiyuki; Katae, Hiromi; and Kawata, Shigeo, to Dainippon Pharmaceutical Co., Ltd. Novel alkaline protease M_3 method for the preparation thereof and dental caries-prophylactic composition containing the same. 4,364,926, Cl. 424-50.000.

Yokohama Kiko Co., Ltd.: *See*—
Ohno, Akira; Katayama, Shitomi; Senaha, Susumu; Kyo, Suizo; and Akagami, Akira, 4,364,637, Cl. 350-288.000.

Yokohda, Yutaka: *See*—
Hayashi, Yukichi; Tamura, Masauuki; Sugimoto, Osamu; Takizawa, Masayoshi; Nishioka, Tatsujiro; Akagawa, Masaki; and Yokohda, Yutaka, 4,364,404, Cl. 133-4.00A.

Yonekura, Seiji: *See*—
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Suzuki, Mituo; and Nakamura, Kenji, 4,365,250, Cl. 340-825.320.

Yonkers, Ronald C., to BRS, Inc. Outer sole for athletic shoe. 4,364,190, Cl. 36-32.00R.

Yoshida, Hiroshi: *See*—
Shimizu, Noboru; Yoshida, Hiroshi; Daigo, Hiromiki; Matumoto, Shiyouichi; and Uchino, Hiroyoshi, 4,365,081, Cl. 560-209.000.

Yoshida, Keisuke, to Yamaha Hatsudoki Kabushiki Kaisha. Steering system for snowmobile steerable skis. 4,364,447, Cl. 180-182.000.

Yoshida, Kiyoshi: *See*—
Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,364,299, Cl. 84-478.000.

Yoshida, Seietsu; Niimi, Yukihide; Ito, Massao; Sawada, Hiroshi; and Demura, Takayuki, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Nippondenso Co., Ltd. Feedback control apparatus for internal combustion engine. 4,364,227, Cl. 60-276.000.

Yoshikawa, Hirofumi: *See*—
Kanai, Tamaki; Yamagichi, Takashi; Yoshikawa, Hirofumi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,364,885, Cl. 264-134.000.

Yoshimi, Takeo: *See*—
Mukai, Kiichiro; Harada, Seiki; Muramatsu, Shin-ichi; Hiraiwa, Atsushi; Takahashi, Shigeru; Usami, Katsuhisa; Iwata, Seiichi; Ito, Satoru; and Yoshimi, Takeo, 4,365,264, Cl. 357-54.000.

Yoshino, Masatsugu: *See*—
Yosizato, Akihiko; Morifuji, Yoshinori; Kondo, Kunio; and Yoshino, Masatsugu, 4,365,032, Cl. 524-99.000.

Yoshitomi Pharmaceutical Industries Ltd.: *See*—
Yamanaka, Tsutomu; Sano, Mitsuharu; and Yasuda, Hiroshi, 4,365,066, Cl. 548-228.000.

Yosizato, Akihiko; Morifuji, Yoshinori; Kondo, Kunio; and Yoshino, Masatsugu, to Asahi Kasei Kogyo Kabushiki Kaisha. Monoester compound of 2,2-alkylidene bis(4,6-di-substituted phenol). 4,365,032, Cl. 524-99.000.

Yosmali, Krikor: *See*—
Shakib, Iraj D.; and Yosmali, Krikor, 4,364,683, Cl. 400-637.000.

Young, Charles A., to United States of America, Navy. Lithium-6 foil neutron detector. 4,365,159, Cl. 250-385.000.

Young, Gary D.: *See*—
Schiler, Frederick S.; and Young, Gary D., 4,364,179, Cl. 33-174.00L.

Young, Lewis B., to Mobil Oil Corporation. Preparation of alkyl carboxylates. 4,365,083, Cl. 560-247.000.

Young, Lewis B., to Mobil Oil Corporation. Preparation of alkyl carboxylates. 4,365,084, Cl. 560-247.000.

Younghouse, Lawrence B., to Exxon Research and Engineering Co. Thermal solar energy collector. 4,364,375, Cl. 126-444.000.

Yuasa, Yoshio; Kisanuki, Toru; and Shirai, Susumu, to Minolta Camera Kabushiki Kaisha. Dual mode camera exposure meters. 4,364,662, Cl. 356-225.000.

Zabiak, Daniel M., to A. B. Dick Company. Pigmented jet printing ink. 4,365,035, Cl. 524-283.000.

Zabor, Eric R.: *See*—
Farkas, Daniel S.; and Zabor, Eric R., 4,364,764, Cl. 65-29.000.

Zabotto, Arlette: *See*—
Griat, Jacqueline; Zabotto, Arlette; and Koulbanis, Constantin, 4,364,930, Cl. 424-81.000.

Zahid, Abduz: *See*—
Jacobellis, A. A.; and Zahid, Abduz, 4,364,416, Cl. 138-30.000.

Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See*—
Horter, Hans-Dieter; Maier, Wolfgang; and Seibold, Herbert, 4,364,278, Cl. 73-862.360.

Zanchi, Vittorio; and Maccianti, Tiziano, to Honeywell Information Systems Italia. System for bidirectional transmission of interlocked signals. 4,365,291, Cl. 364-200.000.

Zavatkay, Robert J., to Barnes Group Inc. Vehicle window operating mechanism. 4,364,202, Cl. 49-352.000.

Zhukov, Anatoly M.: *See*—
Tarasov, Nikolai M.; Varukha, Nikolai A.; Brontman, Rostislav L.; Slesarev, Boris A.; Zhukov, Anatoly M.; Mizik, Valery V.; Rogachev, Evgeny P.; and Gurnov, Nikolai I., 4,365,137, Cl. 219-137.310.

Ziche, Horst, to Henkel Kommanditgesellschaft auf Aktien. Process for the removal of alkali metal halides from cellulose ethers soluble in cold water and use of the purified products in washing and cleansing agent compositions. 4,364,836, Cl. 252-135.000.

Zimmerli, Paul. Device for supporting parcels on a parcel rack of a two-wheeled vehicle. 4,364,497, Cl. 224-40.000.

Zimmerman, Sanford S.: *See*—
Syarto, Louis W.; and Zimmerman, Sanford S., 4,364,696, Cl. 409-138.000.

Zimmern, Bernard, to Uniscrew Limited. Process to supercharge and control a single screw compressor. 4,364,714, Cl. 417-53.000.

Zink, Rudolf; and Loew, Peter, to Ciba-Geigy Corporation. Crystalline bromide or iodide salts of triazole dyes for polyacrylonitrile. 4,364,738, Cl. 8-634.000.

Zino, Costanzo: *See*—
Badagnani, Guido; and Zino, Costanzo, 4,365,314, Cl. 364-900.000.

Zompolas, Thomas, to PAMCO Industries Corp. Redundant vacuum system for aircraft instruments. 4,364,268, Cl. 73-178.00R.

Zullo, Antonio: *See*—
Manservisi, Renato; and Zullo, Antonio, 4,364,464, Cl. 198-419.000.

Zwanenburg, Dirk J.; Nijssen, Wilhelmus P. M.; and van der Staak, Caspert G. I., to U.S. Philips Corporation. Dye-containing layer of a film-forming polymeric binder and the use thereof in an information recording element. 4,364,986, Cl. 428-156.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF DECEMBER, 1982

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bates, Charles L., Jr. Controlled pressure drop valve. Re. 31,105, Cl. 137-625.300.

Coulter Electronics, Inc.: *See*—
Ginsberg, Guenter; Horne, Thomas; and Kreiselman, Robert L., Re. 31,108, Cl. 422-64.000.

Deere & Company: *See*—
Kass, John J.; and Johannsen, Donald O., Re. 31,107, Cl. 417-222.000.

Forster, Friedrich M. O.; and Kalisch, Alfons. Single magnetic stray field sensor whose signals are differently attenuated in two channels and then compared. Re. 31,109, Cl. 324-240.000.

Ginsberg, Guenter; Horne, Thomas; and Kreiselman, Robert L., to Coulter Electronics, Inc. Apparatus for monitoring chemical reactions and employing moving photometer means. Re. 31,108, Cl. 422-64.000.

Hoen, Cuyler: *See*—
Pufpaff, Frederick J.; and Hoen, Cuyler, Re. 31,106, Cl. 403-353.000.

Horne, Thomas: *See*—
Ginsberg, Guenter; Horne, Thomas; and Kreiselman, Robert L., Re. 31,108, Cl. 422-64.000.

Johannsen, Donald O.: *See*—
Kass, John J.; and Johannsen, Donald O., Re. 31,107, Cl. 417-222.000.

Kalisch, Alfons: *See*—
Forster, Friedrich M. O.; and Kalisch, Alfons, Re. 31,109, Cl. 324-240.000.

Kass, John J.; and Johannsen, Donald O., to Deere & Company. Feedback shaft extending between swashplate and displacement control valve. Re. 31,107, Cl. 417-222.000.

Kreiselman, Robert L.: *See*—
Ginsberg, Guenter; Horne, Thomas; and Kreiselman, Robert L., Re. 31,108, Cl. 422-64.000.

Pufpaff, Frederick J.; and Hoen, Cuyler, to Simmons Fastener Corporation. Quarter turn industrial fastener. Re. 31,106, Cl. 403-353.000.

Simmons Fastener Corporation: *See*—
Pufpaff, Frederick J.; and Hoen, Cuyler, Re. 31,106, Cl. 403-353.000.

LIST OF DESIGN PATENTEES

ADIDAS Fabrique de Chaussures de Sport: *See*—
Anderie, Wolf, 267,286, Cl. D2-259.000.

Altomare, Philip N.: *See*—
Axel, Edwin; and Altomare, Philip N., 267,335, Cl. D23-1.000.

American Can Company: *See*—
Schulz, Galyn A., 267,361, Cl. D59-2.00B.

Anderie, Wolf, to ADIDAS Fabrique de Chaussures de Sport. Ear protector. 267,286, 12-21-82, Cl. D2-259.000.

Andrews, Elizabeth. Baby garment. 267,284, 12-21-82, Cl. D2-33.000.

Asano, Takehiro, to Dai Chi Shoji Co., Ltd. Car light. 267,349, 12-21-82, Cl. D26-37.000.

Axel, Edwin; and Altomare, Philip N. Storm water outlet. 267,335, 12-21-82, Cl. D23-1.000.

Balcorail Ltd.: *See*—
Walsh, Brad, 267,345, Cl. D25-38.000.
Walsh, Brad, 267,347, Cl. D25-74.000.
Walsh, Brad, 267,348, Cl. D25-74.000.

Baruffa, Olindo; and Jimenez, Antonio, to Mefina S.A. Sewing machine. 267,322, 12-21-82, Cl. D15-70.000.

Beatty, James J.: *See*—
Beatty, Theodore D.; and Beatty, James J., 267,314, Cl. D12-300.000.

Beatty, Theodore D.; and Beatty, James J. Aquatic recreation vehicle. 267,314, 12-21-82, Cl. D12-300.000.

Belmont Equipment Corp.: *See*—
Watanabe, Tony, 267,340, Cl. D24-4.000.

Benis, Isak. Snap-on file handle. 267,310, 12-21-82, Cl. D8-94.000.

Blasbalg, Morton L. Bird feeder. 267,355, 12-21-82, Cl. D30-15.000.

Blumenthal, David, to Erwin-Lambeth, Inc. Octagonal table. 267,295, 12-21-82, Cl. D6-146.000.

Bolton, Theodore S.; Lang, Richard D.; and Hoyle, Walter W., to Carrier Corporation. Air conditioning unit. 267,338, 12-21-82, Cl. D23-141.000.

Bolton, Theodore S.; Lang, Richard D.; and Burris, John S., to Carrier Corporation. Combined air conditioning unit and duct system. 267,339, 12-21-82, Cl. D23-141.000.

Boschet, Rino: *See*—
Pirovano, Rino; and Boschet, Rino, 267,332, Cl. D19-85.000.

Brown, Daniel: *See*—
Laible, Rodney, 267,342, Cl. D24-57.000.

Bunn-O-Matic Corporation: *See*—
Zimmerman, John D.; and Paradis, Joseph R., 267,325, Cl. D7-309.000.

Burris, John S.: *See*—
Bolton, Theodore S.; Lang, Richard D.; and Burris, John S., 267,339, Cl. D23-141.000.

Busse, Rido: *See*—
Kern, Alfred; Busse, Rido; and Rapp, Reinhold, 267,341, Cl. D24-21.000.

Carrier Corporation: *See*—
Bolton, Theodore S.; Lang, Richard D.; and Hoyle, Walter W., 267,338, Cl. D23-141.000.
Bolton, Theodore S.; Lang, Richard D.; and Burris, John S., 267,339, Cl. D23-141.000.

Cartner, Donald W.: *See*—
Hopkins, Evan L.; and Cartner, Donald W., 267,291, Cl. D4-12.000.

Carville, Hugh F. Mobil horse for transporting leather. 267,358, 12-21-82, Cl. D34-17.000.

Cawley, C. Robert, Jr. Stove. 267,337, 12-21-82, Cl. D23-97.000.

Cole, Albert, to Thermoforce Limited. Temperature responsive control unit for windows of greenhouses and the like. 267,311, 12-21-82, Cl. D8-330.000.

Cooper, Tallie B. Guitar. 267,329, 12-21-82, Cl. D17-14.000.

Crown Marking Equipment Co.: *See*—
Goldstein, Edwin W., 267,331, Cl. D18-15.000.

Dai Chi Shoji Co., Ltd.: *See*—
Asano, Takehiro, 267,349, Cl. D26-37.000.

Datagraphix, Inc.: *See*—
Runyan, Steven R.; Link, William T.; and Hobson, Stephen, 267,328, Cl. D16-18.000.

Davis, Howard F. Shoe sole. 267,288, 12-21-82, Cl. D2-320.000.

Eade, Robert A.; and Quaintance, Peter V. C. Concert shell. 267,315, 12-21-82, Cl. D14-33.000.

Ebauches S.A.: *See*—
Kern, Alfred; Busse, Rido; and Rapp, Reinhold, 267,341, Cl. D24-21.000.

Elkem-Spigerverket, A/S: *See*—
Hyggen, Egil, 267,306, Cl. D8-10.000.

Empire-Fortuno, Ltd.: *See*—
Fortuno, John, 267,336, Cl. D23-58.000.

Eriksson, Hans; and Ronndahl, Sylve. Bottle holder. 267,300, 12-21-82, Cl. D7-70.000.

Erwin-Lambeth, Inc.: *See*—
Blumenthal, David, 267,295, Cl. D6-146.000.

Fischer, Milton. Book holder. 267,298, 12-21-82, Cl. D6-184.000.

Fortuno, John, to Empire-Fortuno, Ltd. Lavatory. 267,336, 12-21-82, Cl. D23-58.000.

France, George E. Truss post cap. 267,308, 12-21-82, Cl. D8-380.000.

Fukushima, Hisao; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Car telephone set. 267,316, 12-21-82, Cl. D14-53.000.

Fukushima, Hisao; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Telephone set. 267,317, 12-21-82, Cl. D14-53.000.

Fukushima, Hisao; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Portable wireless telephone set. 267,318, 12-21-82, Cl. D14-53.000.

Funk, Neil A. Digital time-indicating finger ring. 267,312, 12-21-82, Cl. D10-31.000.

Georgi, Marcel. Combined table, radio receiver and speaker. 267,293, 12-21-82, Cl. D6-4.000.

Goldstein, Edwin W., to Crown Marking Equipment Co. Plastic mount for stamping die. 267,331, 12-21-82, Cl. D18-15.000.

Gooding, Elwyn R., to University of Michigan, The Regents of the. Pneumatic liner for protective headgear. 267,287, 12-21-82, Cl. D2-260.000.

Gravity Guidance, Incorporated: *See*—
Miller, Jack V.; and Miller, Ruth E., 267,343, Cl. D24-64.000.

Herlestam, Tore: *See*—
Sundstrom, Staffan; and Herlestam, Tore, 267,344, Cl. D24-9.000.

Hillstrom, Alan G. Gutter cleaning tool. 267,357, 12-21-82, Cl. 32-46.000.

Hirooka, Junji: *See*—
Fukushima, Hisao; and Hirooka, Junji, 267,316, Cl. D14-53.000.
Fukushima, Hisao; and Hirooka, Junji, 267,317, Cl. D14-53.000.
Fukushima, Hisao; and Hirooka, Junji, 267,318, Cl. D14-53.000.

Hobson, Stephen: *See*—
Runyan, Steven R.; Link, William T.; and Hobson, Stephen, 267,328, Cl. D16-18.000.

Hopkins, Evan L.; and Cartner, Donald W. Windshield cleaning brush. 267,291, 12-21-82, Cl. D4-12.000.

Hoyle, Walter W.: *See*—
Bolton, Theodore S.; Lang, Richard D.; and Hoyle, Walter W., 267,338, Cl. D23-141.000.

Hunt, Lawrence F. Nut cracker mechanism. 267,301, 12-21-82, Cl. D7-98.000.

Hyggen, Egil, to Elkem-Spigerverket, A/S. Spade. 267,306, 12-21-82, Cl. D8-10.000.

J. J. B. Hilliard, W. L. Lyons, Inc.: *See*—
Northcutt, W. Allen, III, 267,313, Cl. D11-1.000.

Jimenez, Antonio: *See*—
Baruffa, Olindo; and Jimenez, Antonio, 267,322, Cl. D15-70.000.

Kawaiski, Masayoshi: *See*—
Suganoya, Yoshio; Miyake, Takao; and Kawaiski, Masayoshi, 267,302, Cl. D7-351.000.

Kern, Alfred; Busse, Rido; and Rapp, Reinhold, to Ebauches S.A. Blood pressure measuring instrument or similar article. 267,341, 12-21-82, Cl. D24-21.000.

Kimzey, John S. Leg splint for horses. 267,356, 12-21-82, Cl. D30-34.000.

Koziatek, Jerome P.: *See*—
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,296, Cl. D6-153.000.

Kroy Industries Inc.: *See*—
Worrell, William R., 267,330, Cl. D18-12.000.

Kurozumi, Shigeru, to Sharp Corporation. Case for an electronic calculator. 267,290, 12-21-82, Cl. D3-30.100.

Laible, Rodney, to Brown, Daniel, a part interest. Specimen collector for a commodeor similar article. 267,342, 12-21-82, Cl. D24-57.000.

Landman Limited: *See*—
Wan, Clement S., 267,303, Cl. D7-402.000.
Wan, Clement S., 267,304, Cl. D7-402.000.

Lang, Richard D.: *See*—
Bolton, Theodore S.; Lang, Richard D.; and Hoyle, Walter W., 267,338, Cl. D23-141.000.
Bolton, Theodore S.; Lang, Richard D.; and Burris, John S., 267,339, Cl. D23-141.000.

Lanier, Jerry W., to Southwire Company. Strip material folder. 267,326, 12-21-82, Cl. D15-145.000.

Lee, Bruce N. Coffee table. 267,297, 12-21-82, Cl. D6-177.000.

Leisure Dynamics, Inc.: *See*—
Pook, Peter D.; and Rosenwinkel, Donald A., 267,334, Cl. D21-240.000.

Lempa, Bernard J., Jr., to Lempa Mfg. Inc. Fertilizer applicator. 267,305, 12-21-82, Cl. D8-02.000.

Lempa Mfg. Inc.: *See*—
Lempa, Bernard J., Jr., 267,305, Cl. D8-02.000.

Lendvay, Joseph G.: *See*—
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,296, Cl. D6-153.000.

Linden, Erkki O., to Oy. Fiskars Ab. Scissors. 267,309, 12-21-82, Cl. D8-57.000.

Link, William T.: *See*—
Runyan, Steven R.; Link, William T.; and Hobson, Stephen, 267,328, Cl. D16-18.000.

Lipschutz, Charles J., to Louisville Manufacturing Co., Inc. Cap. 267,285, 12-21-82, Cl. D2-248.000.

Louisville Manufacturing Co., Inc.: *See*—
Lipschutz, Charles J., 267,285, Cl. D2-248.000.

Lowdon, Jack, to Reynolds Metals Company. Can retriever. 267,307, 12-21-82, Cl. D8-14.000.

Lund, Richard G., III. Prenatal support pillow. 267,299, 12-21-82, Cl. D6-201.000.

Mefina S.A.: *See*—
Baruffa, Olindo; and Jimenez, Antonio, 267,322, Cl. D15-70.000.

Megna, Salvatore J. Hair brush. 267,292, 12-21-82, Cl. D4-35.000.

Miller, Jack V.; and Miller, Ruth E., to Gravity Guidance, Incorporated. Ankle holder. 267,343, 12-21-82, Cl. D24-64.000.

Miller, Ruth E.: *See*—
Miller, Jack V.; and Miller, Ruth E., 267,343, Cl. D24-64.000.

Miyake, Takao: *See*—
Suganoya, Yoshio; Miyake, Takao; and Kawaiski, Masayoshi, 267,302, Cl. D7-351.000.

Molineri, Giuliano, to NECCHI Societa per Azioni. Sewing machine. 267,321, 12-21-82, Cl. D15-69.000.

Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., to Questor Corporation. Hutch. 267,296, 12-21-82, Cl. D6-153.000.

Mustard, Roger E. Wood cart. 267,359, 12-21-82, Cl. D34-26.000.

Najarian, John. Necktie knot support. 267,289, 12-21-82, Cl. D2-401.000.

NECCHI Societa per Azioni: *See*—
Molineri, Giuliano, 267,321, Cl. D15-69.000.

Noji, Masuo: *See*—
Norimatsu, Kenji; and Noji, Masuo, 267,324, Cl. D15-83.000.

Norimatsu, Kenji; and Noji, Masuo, to Sawafuji Electric Co., Ltd. Electric refrigerator and warmer. 267,324, 12-21-82, Cl. D15-83.000.

Northcutt, W. Allen, III, to J. J. B. Hilliard, W. L. Lyons, Inc. Jewelry finding. 267,313, 12-21-82, Cl. D11-1.000.

Nusz, David. Combined valet wall rack and drawer unit. 267,294, 12-21-82, Cl. D6-123.000.

Ogiwara, Kazuyuki, to Sawafuji Electric Co., Ltd. Electric refrigerator. 267,323, 12-21-82, Cl. D15-83.000.

Oki Electric Industry Co., Ltd.: *See*—
Fukushima, Hisao; and Hirooka, Junji, 267,316, Cl. D14-53.000.
Fukushima, Hisao; and Hirooka, Junji, 267,317, Cl. D14-53.000.
Fukushima, Hisao; and Hirooka, Junji, 267,318, Cl. D14-53.000.

Oy. Fiskars Ab: *See*—
Linden, Erkki O., 267,309, Cl. D8-57.000.

Pair, Ron. Dust free loading apparatus. 267,360, 12-21-82, Cl. D34-28.000.

Paradis, Joseph R.: *See*—
Zimmerman, John D.; and Paradis, Joseph R., 267,325, Cl. D7-309.000.

Pelavin, Donald. Storefront. 267,346, 12-21-82, Cl. D25-59.000.

Pirovano, Rino; and Boschet, Rino. Pencil holding container. 267,332, 12-21-82, Cl. D19-85.000.

Pook, Peter D.; and Rosenwinkel, Donald A., to Leisure Dynamics, Inc. Novelty eye glasses. 267,334, 12-21-82, Cl. D21-240.000.

Quaintance, Peter V. C.: *See*—
Eade, Robert A.; and Quaintance, Peter V. C., 267,315, Cl. D14-33.000.

Questor Corporation: *See*—
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,296, Cl. D6-153.000.

Rapp, Reinhold: *See*—
Kern, Alfred; Busse, Rido; and Rapp, Reinhold, 267,341, Cl. D24-21.000.

Reynolds Metals Company: *See*—
Lowdon, Jack, 267,307, Cl. D8-14.000.

Ronndahl, Sylve: *See*—
Eriksson, Hans; and Ronndahl, Sylve, 267,300, Cl. D7-70.000.

Rosenwinkel, Donald A.: *See*—
Pook, Peter D.; and Rosenwinkel, Donald A., 267,334, Cl. D21-240.000.

Runyan, Steven R.; Link, William T.; and Hobson, Stephen, to Datagraphix, Inc. Desk drawer microfiche reader. 267,328, 12-21-82, Cl. D16-18.000.

Sassak, John J. Toy alligator. 267,333, 12-21-82, Cl. D21-157.000.

Sawafuji Electric Co., Ltd.: *See*—
Norimatsu, Kenji; and Noji, Masuo, 267,324, Cl. D15-83.000.
Ogiwara, Kazuyuki, 267,323, Cl. D15-83.000.

Schulz, Galyn A., to American Can Company. Embossed paper toweling. 267,361, 12-21-82, Cl. D59-2.00B.

Seymour, Allen: *See*—
Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,296, Cl. D6-153.000.

Shaffer, Myron W., to Thermo-Seal, Inc. Laminating apparatus. 267,327, 12-21-82, Cl. D15-146.000.

Sharp Corporation: *See*—
Kurozumi, Shigeru, 267,290, Cl. D3-30.100.
Sundstrom, Staffan; and Herlestam, Tore, 267,344, Cl. D24-9.000.

Sharp Kabushiki Kaisha: *See*—
Suganoya, Yoshio; Miyake, Takao; and Kawaiski, Masayoshi, 267,302, Cl. D7-351.000.

Sher, S. Franklin. Pipe. 267,353, 12-21-82, Cl. D27-03.000.

Simmons, Robert G. Flashlight. 267,350, 12-21-82, Cl. D26-48.000.

Southwire Company: *See*—
Lanier, Jerry W., 267,326, Cl. D15-145.000.

Suganoya, Yoshio; Miyake, Takao; and Kawaiski, Masayoshi, to Sharp Kabushiki Kaisha. Microwave oven. 267,302, 12-21-82, Cl. D7-351.000.

Sundstrom, Staffan; and Herlestam, Tore, to Sharp Corporation. Contact lens sterilizer unit. 267,344, 12-21-82, Cl. D24-9.000.

Suzuki, Yoshikazu, to Ushio Denki Kabushiki Kaisha. Electric light. 267,351, 12-21-82, Cl. D26-50.000.

Suzuki, Yoshikazu, to Ushio Denki Kabushiki Kaisha. Combined cover and stand for electric light. 267,352, 12-21-82, Cl. D26-118.000.

Symonds, Darrell C. Blade plough. 267,320, 12-21-82, Cl. D15-11.000.

Thermo-Seal, Inc.: *See*—
Shaffer, Myron W., 267,327, Cl. D15-146.000.

Thermoforce Limited: *See*—
Cole, Albert, 267,311, Cl. D8-330.000.

Tihonovich, Walter. Comb. 267,354, 12-21-82, Cl. D28-21.000.

U.S. Philips Corporation: *See*—
Van De Ven, Peter H. J., 267,319, Cl. D14-73.000.

University of Michigan, The Regents of the: *See*—
Gooding, Elwyn R., 267,287, Cl. D2-260.000.

Ushio Denki Kabushiki Kaisha: *See*—
Suzuki, Yoshikazu, 267,351, Cl. D26-50.000.
Suzuki, Yoshikazu, 267,352, Cl. D26-118.000.
Van De Ven, Peter H. J., to U.S. Philips Corporation. Clock radio receiver. 267,319, 12-21-82, Cl. D14-73.000.
Walsh, Brad, to Balcorail Ltd. Balcony railing for buildings or the like. 267,345, 12-21-82, Cl. D25-38.000.
Walsh, Brad, to Balcorail Ltd. Rail for balcony railing and the like. 267,347, 12-21-82, Cl. D25-74.000.
Walsh, Brad, to Balcorail Ltd. Base rail for balcony railing and the like. 267,348, 12-21-82, Cl. D25-74.000.
Wan, Clement S., to Landman Limited. Rotator primarily for a barbecue spit. 267,303, 12-21-82, Cl. D7-402.000.
Wan, Clement S., to Landman Limited. Rotator primarily for a barbecue spit. 267,304, 12-21-82, Cl. D7-402.000.
Watanabe, Tony, to Belmont Equipment Corp. Dental operatory unit. 267,340, 12-21-82, Cl. D24-4.000.
Worrell, William R., to Kroy Industries Inc. Printing cartridge. 267,330, 12-21-82, Cl. D18-12.000.
Zimmerman, John D.; and Paradis, Joseph R., to Bunn-O-Matic Corporation. Coffee maker. 267,325, 12-21-82, Cl. D7-309.000.

LIST OF PLANT PATENTEES

Beineke, Walter F., to Purdue Research Foundation. Black walnut tree. 4,966, 12-21-82, Cl. 32.000.
Pan American Plant Company: *See*—
van der Knaap, Jacques C. M., 4,967, Cl. 76.000.
Purdue Research Foundation: *See*—
Beineke, Walter F., 4,966, Cl. 32.000.
van der Knaap, Jacques C. M., to Pan American Plant Company. Chrysanthemum named Dark Westland. 4,967, 12-21-82, Cl. 76.000.

CLASSIFICATION OF PATENTS

ISSUED DECEMBER 21, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

209.1 4,364,123
234 4,364,124
255 4,364,125

CLASS 3

1.5 4,364,126
4,364,127
6.1 4,364,128

CLASS 4

324 4,364,129
449 4,364,130
495 4,364,131
546 4,364,132
617 4,364,133

CLASS 5

201 4,364,134
443 4,364,135

CLASS 8

634 4,364,738
654 4,364,739

CLASS 10

86 A 4,364,136

CLASS 14

71.3 4,364,137

CLASS 15

50 R 4,364,138
104.06 R 4,364,141
104.3 SN 4,364,139
4,364,140
117 4,364,142
145 4,364,143
229 AC 4,364,144
236 R 4,364,145
323 4,364,146
404 4,364,147

CLASS 16

32 4,364,148
87 R 4,364,149
126 4,364,150

CLASS 19

0.2 4,364,151
105 4,364,152
107 4,364,153
129 R 4,364,154

CLASS 24

217 R 4,364,155

CLASS 26

2 R 4,364,156

CLASS 28

179 4,364,157

CLASS 29

116 AD 4,364,158
156.5 R 4,364,159
156.8 H 4,364,160
407 4,364,161
570 4,364,163
571 4,364,164
4,364,165
4,364,166
576 B 4,364,167
592 R 4,364,168
596 4,364,169
724 4,364,170
828 4,364,171
858 4,364,172
882 4,364,173

CLASS 30

153 4,364,174

CLASS 33

1 H 4,364,175
18 R 4,364,176
147 K 4,364,177
174 H 4,364,182
174 L 4,364,178
4,364,179
4,364,180
4,364,181
268 4,364,183
447 4,364,184

CLASS 34

122 4,364,185

CLASS 36

3 B 4,364,186
15 4,364,187
31 4,364,188
4,364,189
32 R 4,364,190

CLASS 37

2 R 4,364,191

CLASS 40

155 4,364,192

CLASS 43

1 4,364,193
131 4,364,194

CLASS 44

1 C 4,364,740
51 4,364,741
4,364,742
66 4,364,743

CLASS 46

135 R 4,364,195
242 4,364,196

CLASS 47

56 4,364,197

CLASS 48

86 R 4,364,744
209 4,364,745

CLASS 49

62 4,364,198
181 4,364,199
192 4,364,200
248 4,364,201
352 4,364,202
409 4,364,203

CLASS 51

52 R 4,364,204
298 4,364,746

CLASS 52

4 4,364,205
79.7 4,364,206
81 4,364,207
82 4,364,208
208 4,364,209
221 4,364,210
245 4,364,211
281 4,364,212
309.17 4,364,213
311 4,364,214
488 4,364,215
731 4,364,216

CLASS 53

58 4,364,217
331.5 4,364,218
374 4,364,219
411 4,364,220

CLASS 55

25 4,364,747
27 4,364,748
73 4,364,749
89 4,364,750
96 4,364,751
138 4,364,752
179 4,364,753
269 4,364,754
290 4,364,755
316 4,364,756
357 4,364,757
365 4,364,758
487 4,364,759
523 4,364,760
4,364,761

CLASS 56

13.6 4,364,221
328 R 4,364,222

CLASS 57

5 4,364,223
263 4,364,224
291 4,364,225

CLASS 60

276 4,364,226
4,364,227
398 4,364,228
414 4,364,229
444 4,364,230
577 4,364,231
641.2 4,364,232
712 4,364,233

CLASS 62

3 4,364,234
55.5 4,364,235
77 4,364,236
99 4,364,242
160 4,364,237
217 4,364,238
235.1 4,364,239
476 4,364,240
505 4,364,241

CLASS 65

2 4,364,762
22 4,364,763
29 4,364,764
106 4,364,765
160 4,364,766

CLASS 66

9 B 4,364,243
75.2 4,364,244
78 4,364,245
145 R 4,364,246
163 4,364,247

CLASS 68

5 E 4,364,248

CLASS 70

264 4,364,249
456 R 4,364,250

CLASS 71

86 4,364,767
88 4,364,768
90 4,364,769

CLASS 72

58 4,364,251
59 4,364,252
187 4,364,253
319 4,364,254
345 4,364,255
356 4,364,256
405 4,364,257
453.15 4,364,258

CLASS 73

35 4,364,259
4,364,260
40 4,364,261
53 4,364,262
61.1 C 4,364,263
105 4,364,264
113 4,364,265
115 4,364,266
146 4,364,267
178 R 4,364,268
223 4,364,269
298 4,364,270
432 R 4,364,271
4,364,272
614 4,364,273
615 4,364,274
649 4,364,275
721 4,364,276
862.34 4,364,277
862.36 4,364,278
862.66 4,364,279
4,364,280

CLASS 74

55 4,364,281
424.8 A 4,364,282
489 4,364,283
540 4,364,284
606 R 4,364,285
768 4,364,286

CLASS 75

53 4,364,770
58 4,364,771
126 R 4,364,772

CLASS 76

101 D 4,364,287

CLASS 81

3 R 4,364,288
9.51 4,364,289

CLASS 82

36 R 4,364,290

CLASS 83

100 4,364,291
605 4,364,292
674 4,364,293
796 4,364,294

CLASS 84

1.15 4,364,295
1.26 4,364,296
440 4,364,297
465 4,364,298
478 4,364,299

CLASS 89

36 A 4,364,300

CLASS 91

20 4,364,301
29 4,364,302
329 4,364,303
420 4,364,304

CLASS 92

63 4,364,305
71 4,364,306
157 4,364,307

CLASS 99

351 4,364,308
352 4,364,309
357 4,364,310

CLASS 100

6 4,364,311

CLASS 101

110 4,364,312
401.1 4,364,313

CLASS 104

225 4,364,314

CLASS 105

215 C 4,364,315

CLASS 106

281 R 4,364,773
287.13 4,364,774

CLASS 111

3 4,364,316

CLASS 112

132 4,364,317
147 4,364,318
238 4,364,319
262.2 4,364,320
311 4,364,321

CLASS 114

71 4,364,322
265 4,364,323
280 4,364,324
331 4,364,325
369 4,364,326

CLASS 118

102 4,364,327
411 4,364,328
652 4,364,329
697 4,364,330

CLASS 119

28 4,364,331
48 4,364,332
52 AF 4,364,334
52 R 4,364,333
61 4,364,335

CLASS 123

1 A 4,364,336
3 4,364,337
41.10 4,364,338
41.42 4,364,339
55 R 4,364,340
90.17 4,364,341
143 B 4,364,342
179 B 4,364,343
179 BG 4,364,344
198 F 4,364,345
323 4,364,346
339 4,364,347
4,364,348
4,364,349
4,364,350
357 4,364,351
376 4,364,352
425 4,364,353
437 4,364,354
438 4,364,355
440 4,364,356
4,364,357
4,364,358
4,364,359
450 4,364,360
453 4,364,361
454 4,364,362
492 4,364,363
527 4,364,364
557 4,364,365
564 4,364,366
4,364,367
568 4,364,368
569 4,364,369
575 4,364,370

CLASS 124

5 4,364,371

CLASS 126

39 R 4,364,372
418 4,364,373
442 4,364,374
444 4,364,375

CLASS 128

1.1 4,364,376
1.5 4,364,377
24.5 4,364,378
79 4,364,379
89 A 4,364,380
92 D 4,364,382
92 E 4,364,381
204.28 4,364,384
213 R 4,364,385
214 C 4,364,387
214 E 4,364,386
214 R 4,364,383
234 4,364,388
303 R 4,361,389
303.1 4,364,390
305.3 4,364,391
325 4,364,392
335.5 4,364,393
419 PT 4,364,396
710 4,364,397
736 4,364,398
774 4,364,399

CLASS 131

277 4,364,400
297 4,364,401
311 4,364,402
332 4,364,403

CLASS 133

4 A 4,364,404

CLASS 134

3 4,364,775
10 4,364,776
29 4,364,777

CLASS 135

70 4,364,405

CLASS 136

206 4,365,106
258 4,365,107

CLASS 137

15 4,364,406
71 4,364,407
107 4,364,408
486 4,364,409
489 4,364,410
513.5 4,364,411
557 4,364,412
624.14 4,364,414
624.2 4,364,413
625.3 Re.31,105
625.32 4,364,415

CLASS 138

30 4,364,416
42 4,364,417
103 4,364,418
167 4,364,419

CLASS 139

91 4,364,420
383 A 4,364,421

CLASS 141

1.1 4,364,422

CLASS 144

366 4,364,423

CLASS 148

1.5 4,364,778
4,364,779
6 4,364,780
6.3 4,364,781

CLASS 149

21 4,364,782

CLASS 150

1 4,364,424
51 4,364,425

CLASS 152

209 R 4,364,426
349 4,364,427

CLASS 156

69 4,364,783
78 4,364,784
88 4,364,785
99 4,364,786
164 4,364,787
179 4,364,788
214 4,364,789
346 4,364,790
506 4,364,791
628 4,364,792
643 4,364,793

CLASS 159

17 P 4,364,794

CLASS 162

158 4,364,795

CLASS 165

11 R 4,364,428
28 4,364,429

CLASS 166

214 4,364,430
275 4,364,431
290 4,364,432
339 4,364,433

CLASS 171

63 4,364,434

CLASS 172

15 4,364,435
33 4,364,436
349 4,364,437
789 4,364,438
821 4,364,439

CLASS 173

93.7 4,364,440

CLASS 174

50 4,365,108
109 4,365,109

CLASS 175

84 4,364,441

CLASS 177

177 4,364,442

CLASS 178

22.10 4,365,110
22.13 4,365,111

CLASS 179

1 E 4,365,113
1 SC 4,365,112

1 VE 4,365,114
15.55 T 4,365,115
84 T 4,365,116
99 H 4,365,117
159 4,365,118
170.2 4,365,119

CLASS 180

9.5 4,364,443
65 R 4,364,444
70 R 4,364,445
182 4,364,447
206 4,364,448
271 4,364,449
336 4,364,450

CLASS 181

120 4,364,446

CLASS 182

213 4,364,451

CLASS 184

7 E 4,364,452

CLASS 187

29 R 4,364,453
57 4,364,454

CLASS 188

1.11 4,364,455
106 A 4,364,456
322.17 4,364,457

CLASS 192

0.033 4,364,459
3 T 4,364,458
35 4,364,460

CLASS 194

4 D 4,364,461

CLASS 198

347 4,364,462
405 4,364,463
419 4,364,464
452 4,364,465
459 4,364,466
486 4,364,467
489 4,364,468
616 4,364,469
735 4,364,470
751 4,364,471

CLASS 200

5 A 4,365,120
61.27 4,365,121
61.42 4,365,122
67 DA 4,365,123
81.5 4,365,124
81.9 M 4,365,125
144 AP 4,365,126
144 B 4,365,127
148 F 4,365,128
162 4,365,129
306 4,365,130

CLASS 201

4 4,364,796

CLASS 202

181 4,364,797
267 R 4,364,798

CLASS 204

15 4,364,799
4,364,800
4,364,801
23 4,364,802
30 4,364,803
44 4,364,804
98 4,364,805
4,364,806
114 4,364,807
158 R 4,364,808
159.13 4,364,809
195 R 4,364,810
220 4,364,811
224 M 4,364,812
252 4,364,813
278 4,364,814
283 4,364,815
297 W 4,364,816

CLASS 206

45.34 4,364,472
63.5 4,364,473
219 4,364,474
425 4,364,475
508 4,364,476
511 4,364,477
605 4,364,478

CLASS 208

8 LE 4,364,817
10 4,364,818
96 4,364,819
101 4,364,820
325 4,364,821

CLASS 209

3 4,364,822
135 4,364,823
167 4,364,824
668 4,364,479

CLASS 210

109 4,364,825
150 4,364,826
225 4,364,827
232 4,364,828
238 4,364,829
268 4,364,830
298 4,364,831
518 4,364,832
521 4,364,833
525 4,364,834
752 4,364,835

CLASS 211

85 4,364,480
184 4,364,481

CLASS 213

8 4,364,482

CLASS 215

218 4,364,483
220 4,364,484
232 4,364,485
296 4,364,486

CLASS 219

10.55 M 4,365,131
60 A 4,365,132
69 M 4,365,133
118 4,365,134
121 LE 4,365,136
121 LF 4,365,135
137.31 4,365,137
200 4,365,138
216 4,365,139
225 4,365,140
370 4,365,141
374 4,365,142
401 4,365,143
535 4,365,144

CLASS 220

89 A 4,364,487
281 4,364,488
334 4,364,489
407 4,364,490

CLASS 221

267 4,364,491

CLASS 222

205 4,364,492
399 4,364,493

CLASS 223

28 4,364,494
61 4,364,495
88 4,364,496

CLASS 224

40 4,364,497
42.45 R 4,364,498
4,364,499
325 4,364,500

CLASS 225

13 4,364,501

CLASS 226

45 4,364,502
4,364,503
76 4,364,504
154 4,364,505

CLASS 227

10 4,364,506
83 4,364,507

CLASS 228

106 4,364,508

CLASS 229

17 B 4,364,509
62.5 4,364,510
63 4,364,511

CLASS 235

92 CT 4,365,145
131 R 4,365,146
4,365,147
383 4,365,148
404 4,365,149

CLASS 236

9 A 4,364,512
49 4,364,513

CLASS 237

55 4,364,514

CLASS 239

8 4,364,515
74 4,364,516
171 4,364,517
191 4,364,518
230 4,364,519
330 4,364,520
346 4,364,521
399 4,364,522
533.14 4,364,523
720 4,364,524

CLASS 241

92 4,364,525
186.4 4,364,526

CLASS 242

75.51 4,364,527
107.7 4,364,528
195 4,364,529

CLASS 244

3.22 4,364,530
3.27 4,364,531
30 4,364,532
129.3 4,364,533

CLASS 248

97 4,364,534
123.1 4,364,535
429 4,364,536
448 4,364,537
495 4,364,538
647 4,364,539
654 4,364,540

CLASS 250

207 4,365,150
222 R 4,365,151
231 SE 4,365,152
253 4,365,153
270 4,365,154
282 4,365,157
288 4,365,158
385 4,365,159
396 R 4,365,160
491.1 4,365,163
551 4,365,164
577 4,365,165

CLASS 251

83 4,364,541
214 4,364,542
221 4,364,543
328 4,364,544

CLASS 252

135 4,364,836
173 4,364,837
299.61 4,364,838
301.22 4,364,845
392 4,364,846
412 4,364,847
417 4,364,848
4,364,849
429 B 4,364,851
4,364,852
4,364,853
430 4,364,839
4,364,840
4,364,841
4,364,842
4,364,843
435 4,364,844
437 4,364,854
4,364,855
4,364,856
455 R 4,364,857
463 4,364,858
643 4,364,859

CLASS 254

284 4,364,545

CLASS 256

24 4,364,546

CLASS 260

29.1 SB 4,365,038
112 B 4,364,861
112 R 4,364,862
4,364,863
145 B 4,364,864
239 A 4,364,865
239.3 P 4,364,866
410.7 4,364,868
410.9 R 4,364,869
429.1 4,364,870
439 R 4,364,871
448 A 4,364,872
4,364,873
4,364,874
465 E 4,364,875
465.4 4,364,876

CLASS 264

1.2 4,364,877
2.2 4,364,878
22 4,364,879
28 4,364,880
40.7 4,364,881
45.9 4,364,882
60 4,364,883
118 4,364,884
134 4,364,885
171 4,364,886
4,364,887
177 R 4,364,888
188 4,364,889
191 4,364,890
263 4,364,891
284 4,364,892
325 4,364,893
334 4,364,894
335 4,364,895
513 4,364,896

CLASS 267

110 4,364,547

CLASS 269

139 4,364,548

CLASS 271

1 4,364,549
11 4,364,550
121 4,364,551
182 4,364,552
219 4,364,553
272 4,364,554
308 4,364,555

CLASS 272

69 4,364,556
73 4,364,557
78 4,364,558
142 4,364,559

CLASS 273

1 B 4,364,560
1 G 4,364,561
26 A 4,364,562
26 R 4,364,563
29 R 4,364,564
60 R 4,364,565
86 B 4,364,566
237 4,364,567
242 4,364,568
245 4,364,569
338 4,364,570

CLASS 277

86 4,364,571
92 4,364,572
153 4,364,573

CLASS 280

6 R 4,364,574
19 4,364,575
87.02 W 4,364,576
93 4,364,577
95 R 4,364,578
206 4,364,579
266 4,364,580
411 A 4,364,581
698 4,364,582
802 4,364,583
4,364,584
814 4,364,585

CLASS 283

55 4,364,586

CLASS 285

3 4,364,587
419 4,364,588

CLASS 290

55 4,365,166

CLASS 292

113 4,364,589
336.3 4,364,590

CLASS 293

102 4,364,591

CLASS 294

26 4,364,592
106 4,364,593

CLASS 295

7 4,364,594

CLASS 296

84 R 4,364,595
91 4,364,596
97 H 4,364,597
97 K 4,364,598
190 4,364,599
218 4,364,600
221 4,364,601

CLASS 297

84 4,364,603
163 4,364,604
306 4,364,605
334 4,364,602
337 4,364,606
452 4,364,607

CLASS 301

37 SS 4,364,608

CLASS 303

23 R 4,364,609
36 4,364,610
84 R 4,364,611

CLASS 307

66 4,365,167
115 4,365,168
141.4 4,365,169
252 A 4,365,170
253 4,365,171
270 4,365,172
412 4,365,173
594 4,365,174

CLASS 308

5 R 4,364,612
184 R 4,364,613
187.1 4,364,614
236 4,364,615

CLASS 310

53 4,365,175
54 4,365,176
61 4,365,177
4,365,178
81 4,365,179
216 4,365,180
320 4,365,181
361 4,365,182

CLASS 312

223 4,364,616

CLASS 313

478 4,365,183
503 4,365,184

CLASS 315

39.69 4,365,185
209 R 4,365,186

CLASS 316

24 4,364,617

CLASS 318

254 4,365,187
282 4,365,188
284 4,365,189

CLASS 323

211 4,365,190

CLASS 324

71 R 4,365,191
72 4,365,192
102 4,365,193
116 4,365,194
158 F 4,365,195
207 4,365,196
221 4,365,197
226 4,365,198
240 Re.31,109
318 4,365,199
449 4,365,200

CLASS 328

14 4,365,201
58 4,365,202
63 4,365,203
127 4,365,204

CLASS 329

122 4,365,205

CLASS 330

260 4,365,206
4,365,207
278 4,365,208
308 4,365,209

CLASS 331

1 A 4,365,210
11 4,365,211
111 4,365,212
113 R 4,365,213

CLASS 333

33 4,365,214
127 4,365,215
153 4,365,216
165 4,365,217
187 4,365,218
193 4,365,219
195 4,365,220
202 4,365,221
238 4,365,222

CLASS 335

281 4,365,223

CLASS 336

212 4,365,224

CLASS 337

88 4,365,225
198 4,365,226
202 4,365,227
347 4,365,228

CLASS 338

25 4,365,229
180 4,365,230
334 4,365,231

CLASS 339

17 CF 4,364,620
17 F 4,364,619
17 LC 4,364,618
59 M 4,364,621
97 R 4,364,622
126 RS 4,364,623
154 R 4,364,624
183 4,364,625
184 M 4,364,626

CLASS 340

27 R 4,365,232
73 4,365,233
146.3 AC 4,365,235
146.3 SY 4,365,234
347 AD 4,365,236
521 4,365,237
4,365,238
564 4,365,239
571 4,365,240
636 4,365,241
709 4,365,242
712 4,365,243
782 4,365,244
792 4,365,245
802 4,365,246
825.01 4,365,247
4,365,248
825.3 4,365,249
825.32 4,365,250
870.02 4,365,251

CLASS 343

761 4,365,252
786 4,365,253

CLASS 346

1.1 4,365,254
75 4,365,255
108 4,365,256
135.1 4,365,257
137 4,365,258

CLASS 350

3.76 4,364,627
96.14 4,364,633
97 4,364,634
125 4,364,635
174 4,364,636
288 4,364,637
289 4,364,638
331 R 4,364,639
345 4,364,640
426 4,364,641
429 4,364,642
464 4,364,643
4,364,644
500 4,364,628
503 4,364,631
516 4,364,629
518 4,364,630
536 4,364,632

CLASS 351

204 4,364,645
208 4,364,646

CLASS 354

23 D 4,364,647
25 4,364,648
4,364,649
31 4,364,650
4,364,651
197 4,364,652
203 4,364,653
234 4,364,654
299 4,364,655

CLASS 355

3 CH 4,364,656
3 SH 4,364,657
4,364,661
8 4,364,658
14 D 4,364,659
15 4,364,660

CLASS 356

225 4,364,662
371 4,364,663

CLASS 357

17 4,365,260
24 4,365,261
30 4,365,259
31 4,365,262
45 4,365,263
54 4,365,264

CLASS 358

29 4,365,265
37 4,365,266
84 4,365,267
93 4,365,268
111 4,365,269
140 4,365,270
219 4,365,271
228 4,365,272
260 4,365,273
283 4,365,275
293 4,365,274
301 4,365,276

CLASS 360

72.1 4,365,277
73 4,365,278
109 4,365,279
137 4,365,280

CLASS 361

91 4,365,281
127 4,365,282
233 4,365,283
395 4,365,284

CLASS 362

32 4,365,285

CLASS 363

58 4,365,286
94 4,365,287
141 4,365,288

CLASS 364

143 4,365,289
200 4,365,290
4,365,291
4,365,292
4,365,293
4,365,294
4,365,295
4,365,296
4,365,297
426 4,365,298
431.06 4,365,299
474 4,365,300
475 4,365,301
483 4,365,302
498 4,365,303
515 4,365,304
521 4,365,305
551 4,365,306
557 4,365,307
577 4,365,308
702 4,365,309
822 4,365,310
900 4,365,311
4,365,312
4,365,313
4,365,314
4,365,315

CLASS 365

72 4,365,316
162 4,365,317
200 4,365,318
4,365,319

CLASS 366

84 4,364,664
106 4,364,665
142 4,364,666
325 4,364,667

CLASS 367

21 4,365,320
25 4,365,321
32 4,365,322

CLASS 368

80 4,364,668
111 4,364,669
114 4,364,670
221 4,364,671
240 4,364,672
316 4,364,673
319 4,364,674

CLASS 369

44 4,365,323
4,365,324
173 4,365,325
268 4,365,326

CLASS 370

18 4,365,327
60 4,365,328
100 4,365,329
4,365,330
124 4,365,331

CLASS 371

13 4,365,332
27 4,365,333
4,365,334

CLASS 372

34 4,365,335
45 4,365,336
87 4,365,337

CLASS 374

16 4,364,675
44 4,364,676
4,364,677

CLASS 375

12 4,365,338

CLASS 376

148 4,364,897
190 4,364,898
264 4,364,899
306 4,364,900
438 4,364,901
441 4,364,902

CLASS 378

49 4,365,155
65 4,365,341
84 4,365,156
99 4,365,161
015 4,365,339
039 4,365,340
170 4,365,162
173 4,365,342
181 4,365,343
189 4,365,344
190 4,365,345

CLASS 400

202.2 4,364,678
212 4,364,679
220.1 4,364,680
322 4,364,681
477 4,364,682
637 4,364,683

CLASS 401

264 4,364,684

CLASS 403

108 4,364,685
347 4,364,686
353 Re.31,106
370 4,364,687

CLASS 404

10 4,364,688
25 4,364,689
118 4,364,690

CLASS 405

26 4,364,691
168 4,364,692

CLASS 407

104 4,364,693

CLASS 408

139 4,364,694

CLASS 409

103 4,364,695
138 4,364,696

CLASS 411

38 4,364,697
351 4,364,698

CLASS 414

9 4,364,699
24.5 4,364,700
24.6 4,364,701
31 4,364,702
250 4,364,703
624 4,364,704
713 4,364,705
733 4,364,706
744 B 4,364,707

CLASS 416

132 B 4,364,708
4,364,709
142 4,364,710
4,364,711
183 4,364,712

CLASS 417

50 4,364,713
53 4,364,714
100 4,364,715
222 Re.31,107
394 4,364,716
407 4,364,717
500 4,364,718

CLASS 419

26 4,364,162

CLASS 422

64 Re.31,108
101 4,364,903
104 4,364,904
144 4,364,905

CLASS 423

19 4,364,906
22 4,364,907
86 4,364,908
157 4,364,909
242 4,364,910
317 4,364,911
321 R 4,364,912
365 4,364,913
399 4,364,914
437 4,364,915
447.6 4,364,916
474 4,364,917
573 R 4,364,918
629 4,364,919

CLASS 424

1 4,364,920
5 4,364,921
9 4,364,922
46 4,364,923
49 4,364,924
50 4,364,925
4,364,926
56 4,364,927
79 4,364,928
80 4,364,929
81 4,364,930
84 4,364,931
85 4,364,932
4,364,933
4,364,934
4,364,935
4,364,936
4,364,937
88 4,364,938
180 4,364,939
230 4,364,940
236 4,364,941
245 4,364,942
246 4,364,943
4,364,944
247 4,364,945
249 4,364,946
256 4,364,947
4,364,948
263 4,364,949
4,364,950
4,364,951
266 4,364,952
4,364,953
267 4,364,954
269 4,364,955
4,364,956
271 4,364,957
274 4,364,958
298 4,364,959

CLASS 425

78 4,364,719
144 4,364,720
149 4,364,721
192 R 4,364,722
384 4,364,723

CLASS 426

17 4,364,960
19 4,364,961
41 4,364,962
283 4,364,963
422 4,364,964
481 4,364,965
573 4,364,966
632 4,364,967
639 4,364,968

CLASS 427

38 4,364,969
40 4,364,970
44 4,364,971
54.1 4,364,972
75 4,364,973
213 4,364,974
294 4,364,975
382 4,364,976
429 4,364,977
433 4,364,978

CLASS 428

2 4,364,979
35 4,364,980
4,364,981
65 4,364,982
85 4,364,983
106 4,364,984
149 4,364,985
156 4,364,986
192 4,364,987
212 4,364,988
216 4,364,989
218 4,364,990
265 4,364,991
283 4,364,992
288 4,364,993
316.6 4,364,994
336 4,364,995
369 4,364,996
372 4,364,997
399 4,364,998
411 4,364,999
423.9 4,365,000
480 4,365,001
483 4,365,002
552 4,365,003
593 4,365,004
611 4,365,005

CLASS 429

17 4,365,006
19 4,365,007
36 4,365,008
50 4,365,009
111 4,365,010
193 4,365,011

CLASS 430

19 4,365,012
57 4,365,013
59 4,365,014
62 4,365,015
83 4,365,016
4,365,017
139 4,365,018
190 4,365,019

CLASS 431

11 4,364,724
116 4,364,725
215 4,364,726

CLASS 432

1 4,364,727
8 4,364,728
9 4,364,729

CLASS 433

141 4,364,730
218 4,364,731

CLASS 434

219 4,364,732

CLASS 435

80 4,365,020

CLASS 440

2 4,364,733

CLASS 441

37 4,364,734

CLASS 455

42 4,365,346
179 4,365,347
180 4,365,348
192 4,365,349
330 4,365,350

CLASS 474

14 4,364,735
168 4,364,736

CLASS 493

346 4,364,737

CLASS 501

15 4,365,021
97 4,365,022

CLASS 521

32 4,365,023
114 4,365,024
159 4,365,025
168 4,365,026

CLASS 523

332 4,365,027
402 4,365,028
437 4,365,029
508 4,365,030

CLASS 524

88 4,365,031
99 4,365,032
118 4,365,033
256 4,365,034
283 4,365,035
299 4,365,036
449 4,365,037
773 4,365,039
819 4,365,040

CLASS 525

58 4,365,041
68 4,365,042
113 4,365,043
127 4,364,860
240 4,365,044
247 4,365,045
438 4,365,046
447 4,365,047

CLASS 526

128 4,365,048
245 4,365,049

CLASS 527

312 4,365,050

CLASS 528

64 4,365,051
92 4,365,052
258 4,365,053
277 4,365,054
371 4,365,055
403 4,365,056
503 4,365,057

CLASS 536

6.5 4,365,058
35 4,365,059
65 4,365,060
103 4,365,061

CLASS 544

22 4,365,062

CLASS 546

123 4,365,063
148 4,365,064
334 4,365,065

CLASS 548

228 4,365,066
342 4,365,067
435 4,365,068
567 4,364,867

CLASS 549

260 4,365,069
263 4,365,070
377 4,365,071
415 4,365,072
451 4,365,073

CLASS 556

442 4,365,074

CLASS 560

51 4,365,075
4,365,076
53 4,365,077
94 4,365,078
191 4,365,079
204 4,365,080
209 4,365,081
243 4,365,082
247 4,365,083
4,365,084
251 4,365,085

CLASS 562

512 4,365,086
534 4,365,087
579 4,365,088

CLASS 564

67 4,365,089
127 4,365,090
4,365,091
135 4,365,092
307 4,365,093

CLASS 568

14 4,365,094
462 4,365,095
665 4,365,096
684 4,365,097
726 4,365,098
4,365,099
733 4,365,100

CLASS 570

145 4,365,101
163 4,365,102

CLASS 585

320 4,365,103
467 4,365,104
525 4,365,105

CLASS 604

10 4,364,395
96 4,364,394

CLASSIFICATION OF DESIGNS

D2—	33	267,284		177	267,297		94	267,310		69	267,321	D23—	1	267,335			267,348
	248	267,285		184	267,298		330	267,311		70	267,322		58	267,336	D26—	37	267,349
	259	267,286		201	267,299		380	267,308		83	267,323		97	267,337		48	267,350
	260	267,287	D7—	70	267,300	32—	46	267,357			267,324		141	267,338		50	267,351
	320	267,288		98	267,301	D10—	31	267,312		145	267,326			267,339		118	267,352
	401	267,289		309	267,325	D11—	1	267,313		146	267,327	D24—	4	267,340	D27—	03	267,353
D3—	30.1	267,290		351	267,302	D12—	300	267,314	D16—	18	267,328		9	267,344	D28—	21	267,354
D4—	12	267,291		402	267,303	D14—	33	267,315	D17—	14	267,329		21	267,341	D30—	15	267,355
	35	267,292			267,304		53	267,316	D18—	12	267,330		57	267,342		34	267,356
D6—	4	267,293	D8—	02	267,305			267,317		15	267,331		64	267,343	D34—	17	267,358
	123	267,294		10	267,306			267,318	D19—	85	267,332	D25—	38	267,345		26	267,359
	146	267,295		14	267,307		73	267,319	D21—	157	267,333		59	267,346		28	267,360
	153	267,296		57	267,309	D15—	11	267,320		240	267,334		74	267,347	D59—	2 B	267,361

CLASSIFICATION OF PLANTS

P.—	32	4,966		76	4,967												

GEOGRAPHICAL INDEX

OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 4,364,272
4,364,720
04 : 4,364,183
4,364,208
4,364,221
4,364,234
4,364,287
4,364,531
4,364,618
4,364,707
4,364,828
06 : 4,364,123
4,364,126
4,364,136
4,364,140
4,364,155
4,364,174
4,364,187
4,364,201
4,364,222
4,364,232
4,364,266
4,364,275
4,364,288
4,364,290
4,364,303
4,364,386
4,364,390
4,364,391
4,364,395
4,364,408
4,364,410
4,364,416
4,364,447
4,364,451
4,364,452
4,364,458
4,364,490
4,364,492
4,364,501
4,364,503
4,364,515
4,364,530
4,364,546
4,364,559
4,364,568
4,364,585
4,364,600
4,364,619
4,364,627
4,364,632
4,364,686
4,364,691
4,364,692
4,364,697
4,364,708
4,364,710
4,364,715
4,364,748
4,364,752
4,364,775
4,364,793
4,364,847
4,364,857
4,364,861
4,364,920
4,364,977
4,364,984
4,364,991
4,365,004
4,365,029
4,365,117
4,365,132
4,365,136
4,365,159
4,365,186
4,365,197
4,365,204
4,365,227
4,365,239
4,365,246
4,365,280
4,365,288
4,365,295
4,365,313
4,365,322
4,365,331
4,365,332
4,365,339
08 : 4,364,253
4,364,575
4,364,818
4,364,834
4,365,112
4,365,120
09 : 4,364,146
4,364,158
4,364,202
4,364,274
4,364,330
4,364,376
4,364,413
4,364,475
4,364,569
4,364,592
4,364,604
4,364,679
4,364,682
4,364,696
4,364,773
4,364,878
4,364,884
4,364,888
4,364,910
4,364,913
4,364,940
4,364,957
4,365,006
4,365,007
4,365,008
4,365,077
4,365,139
4,365,146
4,365,147
4,365,149
4,365,293
4,365,303
4,365,310
10 : 4,364,998
4,365,044
11 : 4,365,106
12 : Re.31,108
4,364,134
4,364,143
4,364,145
4,364,228
4,364,261
4,364,379
4,364,471
4,364,521
4,364,794
4,364,824
4,364,880
4,364,912
4,365,024
4,365,222
4,365,230
4,365,338
13 : 4,364,298
4,364,334
4,364,502
4,364,509
4,364,729
4,364,788
4,364,895
4,365,145
17 : 4,364,142
4,364,161
4,364,196
4,364,229
4,364,297
4,364,308
4,364,313
4,364,336
4,364,356
4,364,383
4,364,387
4,364,424
4,364,439
4,364,463
4,364,466
4,364,484
4,364,491
4,364,547
4,364,581
4,364,603
4,364,616
4,364,663
4,364,666
4,364,745
4,364,791
4,364,819
4,364,820
4,364,821
4,364,843
4,364,848
4,364,849
4,364,852
4,364,870
4,364,893
4,364,905
4,364,975
4,364,981
4,365,028
4,365,033
4,365,035
4,365,055
4,365,074
4,365,122
4,365,130
4,365,140
4,365,260
4,365,345
18 : 4,364,165
4,364,167
4,364,172
4,364,233
4,364,289
4,364,344
4,364,441
4,364,456
4,364,494
4,364,514
4,364,522
4,364,556
4,364,615
4,365,098
4,365,148
4,365,171
4,365,232
4,365,266
4,365,289
19 : Re.31,107
4,364,698
4,364,705
4,365,268
20 : 4,364,182
4,364,203
4,364,442
4,364,526
4,364,554
4,364,699
4,364,817
4,365,092
21 : 4,364,523
4,364,683
4,364,749
4,364,906
4,365,071
4,365,129
22 : 4,364,283
4,364,407
4,364,435
4,364,678
4,364,833
4,364,872
4,364,873
4,364,874
24 : 4,364,164
4,364,188
4,364,267
4,364,279
4,364,311
4,364,440
4,364,495
4,364,520
4,364,835
4,364,903
4,365,025
4,365,110
4,365,173
4,365,195
4,365,200
4,365,341
25 : 4,364,325
4,364,405
4,364,562
4,364,655
4,364,677
4,365,005
4,365,072
4,365,073
4,365,085
4,365,131
4,365,134
4,365,183
4,365,225
4,365,281
4,365,294
4,365,343
26 : 4,364,132
4,364,214
4,364,231
4,364,254
4,364,258
4,364,260
4,364,265
4,364,300
4,364,315
4,364,342
4,364,343
4,364,351
4,364,366
4,364,367
4,364,388
4,364,500
4,364,571
4,364,584
4,364,591
4,364,595
4,364,614
4,364,621
4,364,719
4,364,761
4,364,783
4,364,831
4,364,897
4,364,954
4,365,026
4,365,075
4,365,103
4,365,151
4,365,169
4,365,238
27 : 4,364,210
4,364,213
4,364,370

4,364,396
4,364,397
4,364,437
4,364,476
4,364,622
4,364,695
4,364,716
4,364,747
4,364,751
4,364,754
4,364,963
4,364,972
4,364,995
4,365,189
4,365,192
4,365,257
4,365,290
28 : 4,364,517
29 : 4,364,219
4,364,294
4,364,310
4,364,499
4,364,548
4,364,557
4,364,701
4,364,736
4,364,758
4,364,759
4,364,768
4,364,925
30 : 4,364,438
4,364,567
32 : 4,365,211
33 : 4,364,190
4,365,234
34 : 4,364,150
4,364,184
4,364,185
4,364,193
4,364,209
4,364,375
4,364,381
4,364,454
4,364,465
4,364,485
4,364,508
4,364,527
4,364,529
4,364,558
4,364,561
4,364,564
4,364,623
4,364,721
4,364,741
4,364,742
4,364,767
4,364,778
4,364,779
4,364,814
4,364,827
4,364,837

4,364,856
4,364,863
4,364,908
4,364,916
4,364,924
4,364,927
4,364,932
4,364,933
4,364,934
4,364,935
4,364,936
4,364,937
4,364,989
4,365,009
4,365,030
4,365,059
4,365,070
4,365,083
4,365,084
4,365,093
4,365,097
4,365,104
4,365,156
4,365,160
4,365,174
4,365,182
4,365,202
4,365,208
4,365,212
4,365,215
4,365,300
4,365,305
4,365,324
35 : 4,364,394
4,365,109
4,365,282
36 : Re.31,106
4,364,129
4,364,138
4,364,166
4,364,195
4,364,198
4,364,211
4,364,212
4,364,244
4,364,368
4,364,385
4,364,399
4,364,417
4,364,426
4,364,481
4,364,482
4,364,507
4,364,512
4,364,532
4,364,534
4,364,550
4,364,626
4,364,645
4,364,667

4,364,670
4,364,709
4,364,744
4,364,795
4,364,846
4,364,853
4,364,881
4,364,891
4,364,929
4,364,966
4,364,968
4,364,993
4,365,016
4,365,017
4,365,019
4,365,038
4,365,042
4,365,050
4,365,065
4,365,086
4,365,099
4,365,111
4,365,163
4,365,164
4,365,178
4,365,187
4,365,203
4,365,219
4,365,235
4,365,258
4,365,298
4,365,317
4,365,318
4,365,333
37 : 4,364,263
4,364,320
4,364,332
4,364,675
4,364,825
38 : 4,364,335
39 : 4,364,128
4,364,139
4,364,159
4,364,160
4,364,179
4,364,200
4,364,215
4,364,236
4,364,255
4,364,286
4,364,292
4,364,337
4,364,364
4,364,372
4,364,446
4,364,496
4,364,504

4,364,505
4,364,516
4,364,579
4,364,589
4,364,625
4,364,633
4,364,694
4,364,722
4,364,723
4,364,728
4,364,735
4,364,740
4,364,757
4,364,762
4,364,764
4,364,765
4,364,766
4,364,798
4,364,805
4,364,806
4,364,883
4,364,887
4,364,896
4,365,003
4,365,018
4,365,021
4,365,027
4,365,031
4,365,034
4,365,039
4,365,046
4,365,051
4,365,069
4,365,078
4,365,180
4,365,198
4,365,228
4,365,240
40 : 4,364,430
4,364,545
4,364,588
4,364,823
4,364,839
4,364,840
4,364,841
4,364,842
4,364,854
4,364,855
4,365,143
41 : 4,364,189
4,364,377
4,364,524
4,364,555
4,364,693
4,365,108
4,365,150
4,365,285
42 : 4,364,124
4,364,127
4,364,148

4,364,171
4,364,237
4,364,280
4,364,444
4,364,468
4,364,474
4,364,538
4,364,586
4,364,772
4,364,786
4,364,810
4,364,822
4,364,830
4,364,858
4,364,889
4,364,948
4,364,967
4,365,045
4,365,053
4,365,063
4,365,079
4,365,095
4,365,105
4,365,125
4,365,175
4,365,176
4,365,214
4,365,251
4,365,259
4,365,275
4,365,283
4,365,292
4,365,302
44 : 4,364,638
45 : 4,364,156
4,364,420
4,364,421
4,364,990
46 : 4,364,157
4,364,199
47 : 4,364,144
4,364,269
4,364,295
4,364,907
4,364,911
4,365,172
4,365,237
4,365,301
48 : 4,364,133
4,364,262
4,364,277
4,364,409
4,364,412
4,364,432
4,364,433
4,364,542
4,364,544
4,364,587
4,364,596
4,364,620

4,364,624
4,364,731
4,364,756
4,364,813
4,364,815
4,364,829
4,364,871
4,364,909
4,364,915
4,364,917
4,364,918
4,365,010
4,365,080
4,365,096
4,365,141
4,365,154
4,365,190
4,365,191
4,365,199
4,365,210
4,365,213
4,365,245
4,365,261
4,365,297
4,365,306
4,365,321
4,365,350
49 : Re.31,105
4,364,782
4,364,797
51 : 4,364,170
4,364,194
4,364,371
4,364,401
4,364,743
4,364,922
4,365,054
53 : 4,364,192
4,364,324
4,364,411
4,364,434
4,364,519
4,364,563
4,364,570
4,364,732
4,364,945
4,365,229
54 : 4,365,102
55 : 4,364,137
4,364,175
4,364,230
4,364,268
4,364,392
4,364,450
4,364,700
4,364,787
4,365,036
4,365,124
4,365,315
56 : 4,364,537

DESIGN PATENTS

06 : 267,292
267,310
267,314
267,328
267,336
267,340
267,343
267,353

267,356
08 : 267,354
09 : 267,315
12 : 267,346
13 : 267,295
267,326
17 : 267,308
267,325

18 : 267,329
19 : 267,301
20 : 267,291
21 : 267,285
267,313
23 : 267,284
26 : 267,287
267,333

267,360
27 : 267,299
267,330
267,334
31 : 267,342
34 : 267,289
267,297
36 : 267,288

267,298
267,331
267,338
267,339
267,358
42 : 267,335
267,337
44 : 267,355

48 : 267,305
267,327
49 : 267,294
51 : 267,307
267,359
55 : 267,296
267,357
267,361

PLANT PATENTS

18 : 4,966

U.S. GOVERNMENT PRINTING OFFICE : O—1982

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, *Commissioner*